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Angler Effort and Catch in the 1985-1988 Lower Fraser River Sport Fishery

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by

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ABSTRACT

Schubert, N.D. 1992. Angler effort and catch in the 1985-1988 lower Fraser River sport fishery. Can. Manuscr. Rep. Fish. Aquat. Sci. 2170: 140 p.

The recreational fishery in the lower 150 km of the Fraser River was assessed using an access point-overflight study design from 1985 to 1988. Over the course of the study, 202 overflights were conducted and 57,124 angler interviews were obtained from 21 sampling sites to estimate monthly angler effort, and the harvest (marked and unmarked) and release by species of salmon (*Oncorhynchus spp.*), trout (*Salmo spp.*), char (*Salvelinus spp.*) and sturgeon (*Acipenser spp.*). This report provides, for four study regions, monthly summaries of interview responses and monthly estimates of angler effort, hourly angler effort profiles, harvest by species and mark type, and release by species.

Annual study period angler effort ranged from 485,931 to 794,658 angler hours. Annual catches (harvest plus release) ranged from 728 to 2,410 chinook adults, 967 to 7,439 chinook jacks, 3,419 to 9,277 coho adults, 5,680 to 20,675 coho jacks, 553 to 1,333 steelhead, 1,637 to 5,560 cutthroat, 223 to 1,459 Dolly Varden and 124 to 556 sturgeon, among other species.

Key words: lower Fraser River, recreational fisheries, angler effort, harvest, release, salmon, trout, char, sturgeon.

RÉSUMÉ

Schubert, N.D. 1992. Angler effort and catch in the 1985-1988 lower Fraser River sport fishery. Can. Manuscr. Rep. Fish. Aquat. Sci. 2170: 140 p.

Entre 1985 et 1988, on a estimé la pêche récréative dans les derniers 150 km du Fraser en procédant par survol des points d'accès. Pendant la durée de l'étude, il y a eu 202 survols et 57 124 interviews de pêcheurs sportifs à la ligne rencontrés à 21 stations d'échantillonnage, afin d'estimer l'effort mensuel de pêche à la ligne ainsi que la récolte (de sujets marqués ou non) et la remise en liberté, par espèce, de saumon (*Oncorhynchus spp.*), de truite (*Salmo spp.*), d'omble (*Salvelinus spp.*) et d'esturgeon (*Acipenser spp.*). Ce rapport fournit, pour quatre régions d'étude, des résumés mensuels des résultats d'interivews et des estimations mensuelles de l'effort de pêche à la ligne, des profils des heures d'effort de pêche, le nombre de captures par espèce et par type de marques ainsi que la remise en liberté par espèce.

L'effort annuel de pêche à la ligne durant la période d'étude a varié entre 485 931 et 794 658 heures-pêcheurs. Les prises annuelles (récolte et remises en liberté) ont varié comme suit : 728 à 2410 quinnats adultes, 967 à 7439 jeunes quinnats précoces, 3419 à 9277 cohos adultes, 5680 à 20 675 jeunes cohos précoces, 553 à 1333 steelhead, 1637 à 5560 truites fardées, 223 à 1459 Dolly Varden et 124 à 556 esturgeons, sans compter les autres espèces.

Mots clés: cours inférieur du Fraser, pêche récréative, effort de pêche à la ligne, récolte, remise en liberté, saumon, truite, omble, esturgeon.

INTRODUCTION

The Fraser River below Hope supports a year round recreational fishery for salmon (*Oncorhynchus spp.*), trout (*Salmo spp.*), char (*Salvelinus spp.*) and sturgeon (*Acipenser spp.*). Preliminary fishery studies in 1982 (Mosley MS 1983) and 1984 (DPA Group MS 1985a) indicated that the lower Fraser River fishery was among the largest river sport fisheries in British Columbia. These studies provided the basic data used to design the current study, the first comprehensive assessment of this sport fishery.

This report describes the study design and field procedures and documents the results (angler effort, harvest and release by species and mark type, and angler attributes) of the 1985-1988 lower Fraser River sport fishery study. The results are presented by region and month, and the report concludes with a discussion of fishery dynamics and an evaluation of the impacts of regulatory change. A companion report (Schubert 1992) provides bar-specific data and is intended as a source document for the planning of future studies.

STUDY AREA DESCRIPTION

The Fraser is the largest river in British Columbia, draining most of the southern half of the province. The river originates in the Rocky Mountains and flows north through the Rocky Mountain Trench then south through the Interior Plateau and Coast Mountains before turning west for the final 150 km to the Strait of Georgia. This study focused on the sport fishery in the lower 150 km below Hope (Fig. 1). In this area, the river flows through a wide alluvial valley bounded to the north by the Coast Mountains. The river channel has an average width of 600 m, with a maximum freshet width of 5 km in some areas (Fraser *et al.* 1982). The river is tidal as far upstream as Chilliwack (90 km). Anglers fish primarily from shore or midchannel gravel bars using rods, set in rod holders, rigged with 57 g sinkers and drop leaders. Few angle from boats, except in the fall at the mouth of the Sumas and Coquitlam rivers and Nicomen Slough and at Tree Bar.

The study area was divided into four regions delineated by three tributaries: the Pitt, Vedder-Chilliwack (via Sumas River) and Harrison rivers. Region 1 extended from the mouth (in 1985 only, from the George Massey Tunnel on the Main Arm and the Oak Street Bridge on the North Arm) to the Pitt River (Fig. 2). The region included the main channel, the North and Middle arms and other smaller channels such as Sea Reach, Canoe Pass and Annacis Channel. Surveyors were stationed at up to five sites: River and Byrne roads and Tree on the North Arm and Richmond Dump and Brownsville on the main channel.

In Region 2, extending between the Pitt and Sumas rivers (Fig. 3), the river is confined largely to a single channel. In the upper part of the region, the Mission Bridge forms the regulatory boundary between the tidal and nontidal portions of the river. Surveyors were stationed at up to seven sites: Edgewater, Two Bit, Poplar, Duncan, Standard Gas, Ridgedale and Dewdney.

In Region 3, extending between the Sumas and Harrison rivers (Fig. 4), the gradient is higher and the river braids into channels separated by gravel bars and treed islands. Surveyors were stationed at up to seven sites: Sumas Mouth, Hepner's, Bowman's, Wing Dam, Grassy Bank, Englebrich and Queen's Island.

In Region 4, extending between the Harrison and Coquihalla (top of Waleach Slough after Sept. 1, 1986)

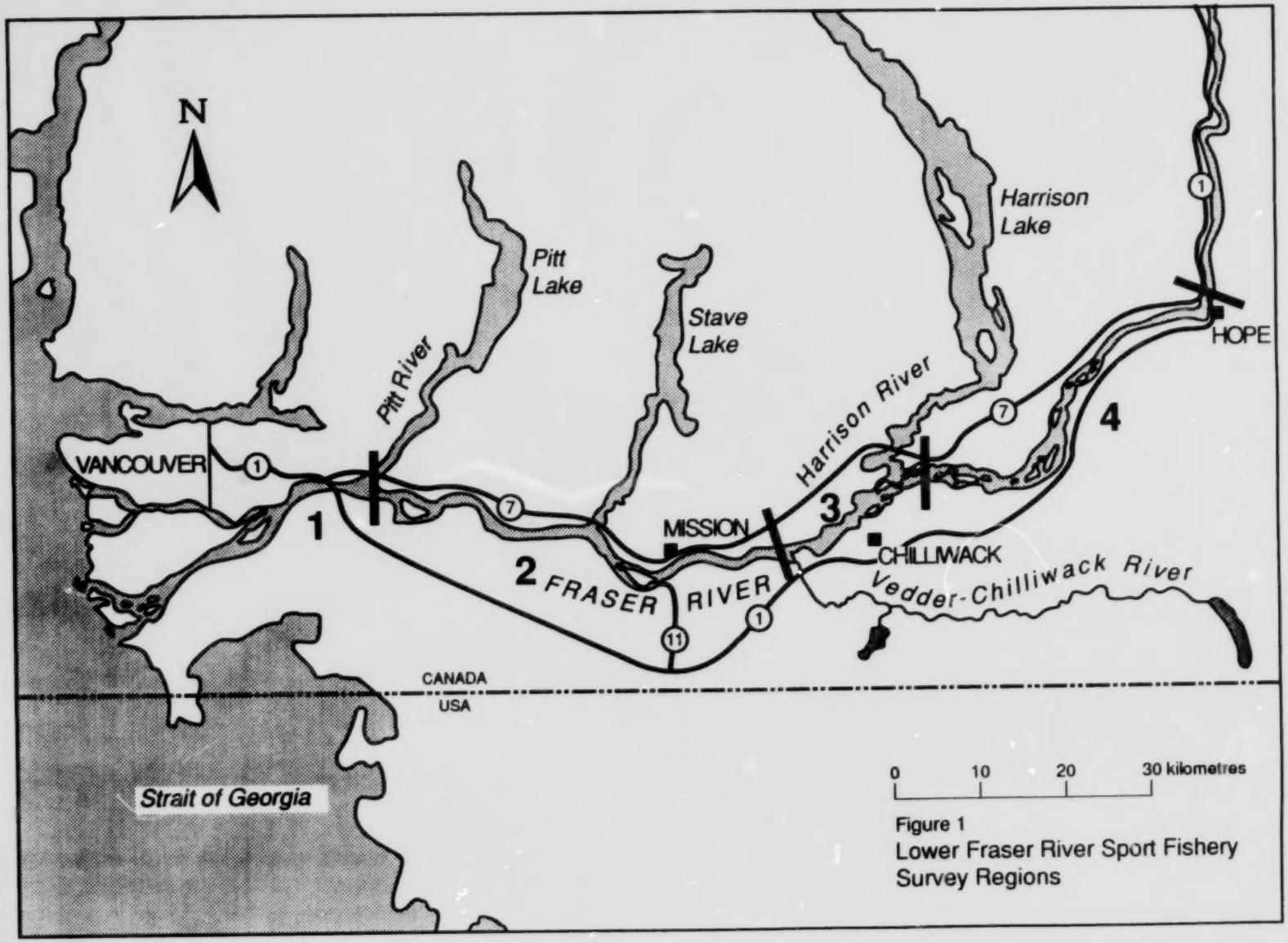

Figure 1
Lower Fraser River Sport Fishery
Survey Regions

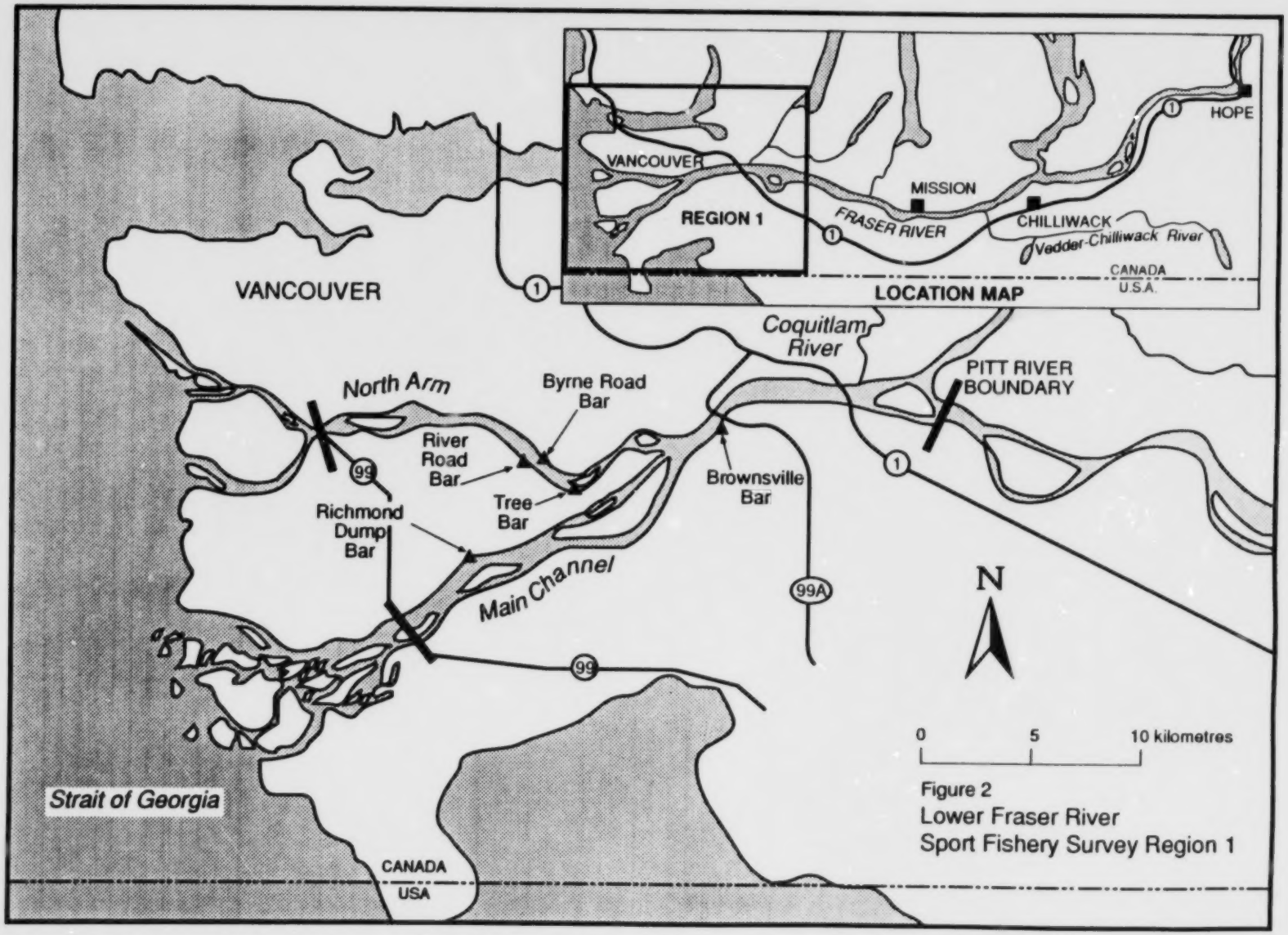

Figure 2
Lower Fraser River
Sport Fishery Survey Region 1

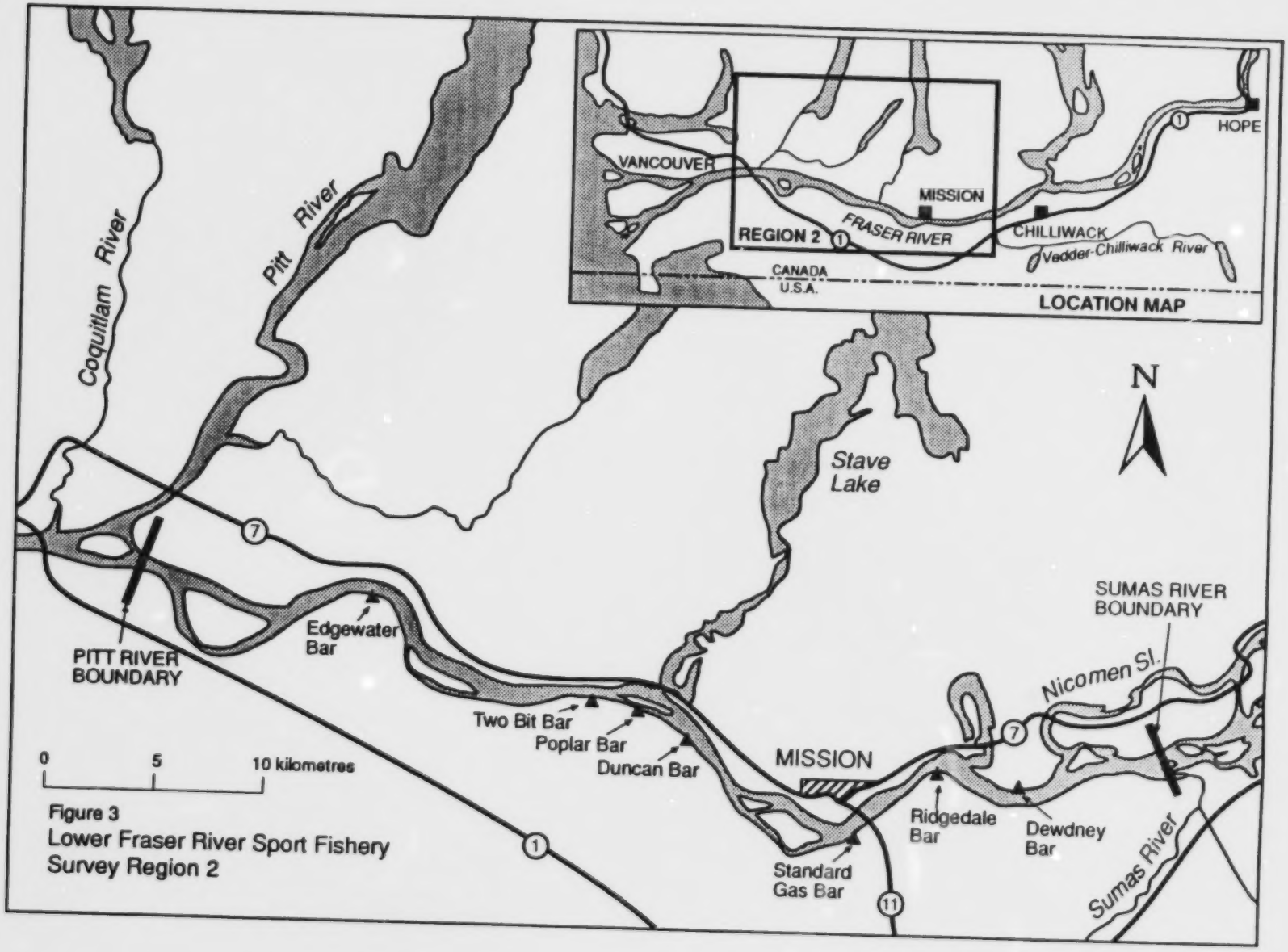

Figure 3
Lower Fraser River Sport Fishery
Survey Region 2

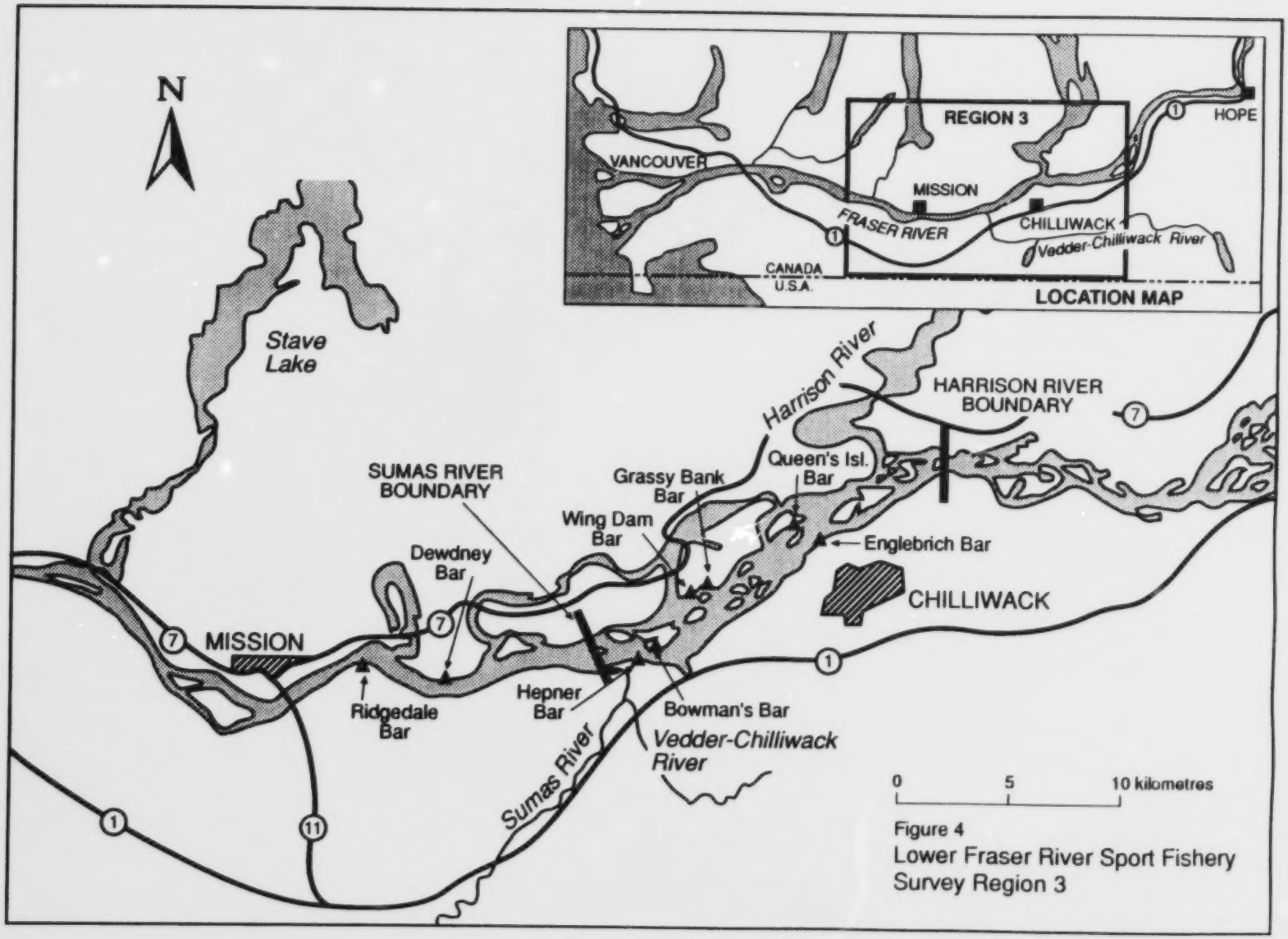

Figure 4
Lower Fraser River Sport Fishery Survey Region 3

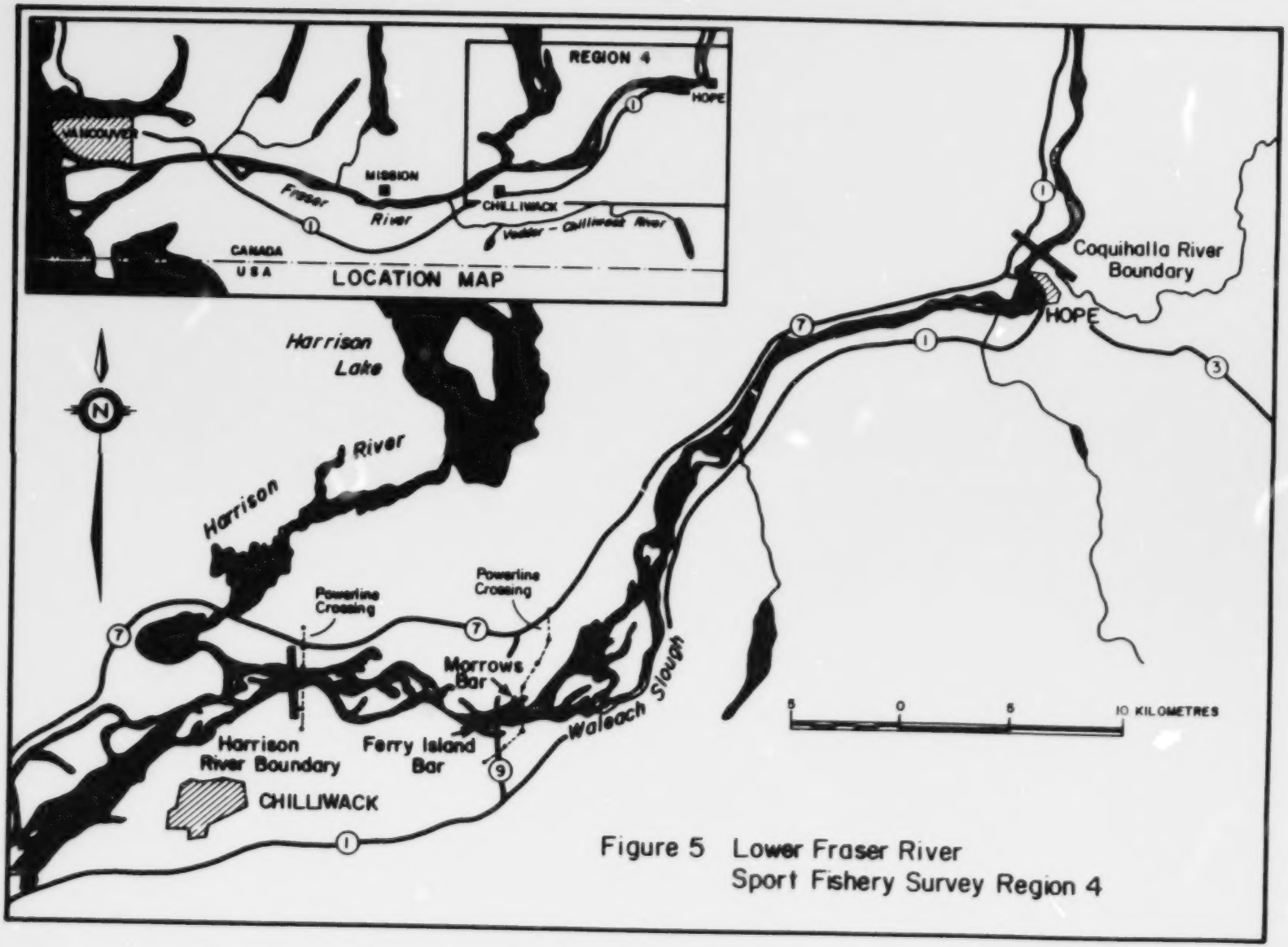

Figure 5 Lower Fraser River
Sport Fishery Survey Region 4

Table 1. Sport fishery regulations in the tidal (mouth to Mission Bridge) and nontidal (above Mission Bridge) portions of the 1985-88 lower Fraser River sport fishery.

Location	Species	Year	Angler limits		Time period
			Daily a	Annual	
Tidal waters	Salmon (any species)	1985-88	4 b	n/a	All year
	Trout and char	1985-88	8 c	n/a	All year
	Sturgeon	1985-88	1	n/a	All year
	Exceptions to above:				
	Chinook adults	1985 d	1	10	01-Sep to 31-Dec
		1986	1	10	01-Sep to 31-Dec
		1987	1	10	01-Jul to 31-Dec
		1988	1	10	01-Jul to 31-Dec
Nontidal waters	Salmon (chinook and coho only)	1985-88	4 b	n/a	All year
	Trout and char	1985-88	2 e	10 f	All year
	Sturgeon	1985-88	1 g	n/a	All year
	Exceptions to above:				
	Chinook adults h	1985	1	10	01-Sep to 31-Dec
		1986	1	10	01-Sep to 31-Dec
		1987	1	10	01-Jul to 31-Dec
		1988	1	10	01-Jul to 31-Dec
	Wild Steelhead	1985-88	0	10	01-Dec to 30-Apr
		1986	0	10	01-Oct to 30-Nov

a. Permanent minimum size limits are in effect: 30 cm nose-fork length (FL) for all salmon and trout; 100 cm FL for sturgeon.
b. Maximum over 50 cm FL: 2 coho and 0 chinook.
c. Maximum over 50 cm FL: 2 (including wild and hatchery steelhead trout).
d. George Massey Tunnel to Mission Bridge and the North Arm above the Oak Street Bridge.
e. Maximum over 50 cm FL: 1 (including wild and hatchery steelhead trout); anglers must cease fishing after killing one steelhead trout.
f. Annual limit for steelhead trout only; maximum wild steelhead over 50 cm FL: 2 per month.
g. Maximum size limit (1986-88): 200 cm FL.
h. Mission to Agassiz-Rosedale Bridge only.

rivers (Fig. 5), the gradient is relatively high and, except below Agassiz, the river is confined largely to a single channel. Surveyors were stationed at up to two sites: Ferry Island and Morrow's.

FISHERY REGULATIONS

The 1985-1988 lower Fraser River sport fishery was managed through restrictions in daily and annual harvest limits and fish size (Table 1). The tidal (mouth to Mission Bridge) and non-tidal (above Mission Bridge) portions of the study area were under the jurisdiction of federal and provincial agencies, respectively; however, in most cases, similar regulations applied in each area. Major changes during the study period are detailed below.

CHINOOK ADULTS

The retention of chinook adults (greater than 50 cm nose-fork length) in the lower Fraser River sport fishery was eliminated in 1980 as a conservation measure in response to declining returns to the river. By 1985, returns to the river had improved and conservation measures were progressively relaxed. In 1985-1986, the retention of chinook adults was permitted from September to December, providing access to Harrison River chinook. Openings in July and August 1987-1988 permitted the harvest summer run chinook. Overall, the chinook adult fishery expanded from 122 days in 1985 to 214 days in 1988.

WILD STEELHEAD

The wild steelhead fishery was closed in October and November, 1986 as an emergency conservation measure for Thompson River steelhead.

METHODS

STUDY DESIGN

The lower Fraser River sport fishery was assessed using an access point-overflight design (DPA Group MS 1985a). The September to November 1985 study encompassed an area bounded by the George Massey Tunnel on the Main Arm, the Oak Street Bridge on the North Arm, and the Coquihalla River. In the May to December 1986, March to December 1987 and April to December 1988 studies, the lower boundary was moved to the river mouth when that area was reopened to the retention of fin fish in 1986. On September 1, 1986, the upper boundary was moved to the top of Waleach Slough because minimal effort had been observed above that point.

Each year, five surveyors worked one of two eight hour shifts which encompassed most daylight hours; shift times were adjusted monthly to compensate for seasonal changes in day length. The study period was stratified by month into weekday and weekend or holiday day types, with weekly assessment of up to three of the former and all of the latter. Surveyors were stationed at the areas of maximum expected angler effort and, with the exception of Region 4, a minimum of one surveyor was assigned to each region. Surveyors assessed up to two sites per month, with monthly sites changing with angler effort (Table 2). The minimum monthly site effort was two morning and afternoon shifts per weekday and weekend or holiday stratum.

At the start of each shift, the surveyors requested anglers to report for an interview at the end of the fishing trip and, on the morning shift, inquired if any anglers had left before the arrival of the surveyor. The surveyors then remained at the site access to conduct hourly rod counts and exit interviews. At the end of each shift, any anglers still fishing were interviewed. Each interview recorded trip length (to time of interview and expected additional time, if any), target species, number and species harvested or released, identifying marks on harvested fish (fin or maxillary clip) and gear type. When possible, harvest was inspected to confirm species and mark identification. An interview form was completed for each angler; however, if the angler was unresponsive or if response reliability was questionable, the form was voided.

Anglers were counted from a Cessna 172 aircraft flying at approximately 30 meters and 130 kmh. The number of flights per month varied from two to ten, with more flights during periods of higher angler effort. Flights were allocated equally between weekdays and weekend days. On each flight, independent counts were made by two observers seated on

Table 2. Allocation of surveyors, by year, month, region and site, in the 1985-88 lower Fraser River sport fishery. a

		Region 1				Region 2						Region 3						Region 4
Year	Month	Brownsville	Richmond Dump	River Road	Tree Island	Duncan	Edgewater	Poplar	Ridgedale	Standard Gas	Two Bit	Bowmans	Englebrich	Grassy Bank	Queen's Island	Sumas Mouth	Wing Dam	Ferry Island
1985	September b	+	+	-	-	+	+	-	-	+	-	+	+	-	-	-	+	+
	October	+	+	-	+	+	+	-	-	+	-	+	+	-	-	-	+	+
	November	+	-	-	+	+	+	-	-	+	-	-	+	+	-	-	+	+
1986	May	+	-	+	-	+	+	+	-	+	-	-	+	-	-	-	+	-
	June	+	-	+	-	+	+	-	-	+	-	-	+	-	-	-	-	-
	July	+	+	-	-	+	+	-	-	+	-	-	+	-	-	-	-	-
	August	+	+	-	-	+	+	-	-	+	-	-	+	-	-	-	+	+
	September	+	-	+	-	+	+	-	-	+	-	+	+	-	-	-	+	+
	October	+	-	+	+	+	+	-	-	+	-	+	+	-	-	-	+	+
	November	+	-	+	+	+	+	-	+	+	+	+	+	+	-	-	+	+
	December c	+	-	-	-	+	+	-	+	+	-	-	+	+	+	-	-	+
1987	March	+	-	-	-	+	+	-	-	+	-	-	-	-	+	-	-	-
	April	+	-	-	-	+	+	-	-	+	-	-	-	+	+	+	-	-
	May	+	-	-	-	+	+	-	-	+	-	-	-	-	+	+	-	-
	June	+	+	-	-	+	+	+	-	+	-	-	-	-	+	+	-	-
	July	+	+	-	-	+	+	+	+	+	-	-	-	-	+	-	-	-
	August	+	+	-	-	+	+	-	+	+	-	+	-	-	+	+	-	+
	September	+	-	+	-	+	+	-	-	+	-	+	+	-	-	-	+	+
	October	+	-	-	+	+	+	-	-	+	-	+	+	-	-	-	+	+
	November	+	-	-	+	+	+	-	+	+	-	+	+	-	-	-	+	+
	December	-	-	+	-	-	+	+	+	+	-	-	-	+	-	-	-	+
1988	April	+	-	-	-	+	+	-	-	+	-	-	-	-	-	-	-	-
	May	+	-	-	-	+	+	-	-	+	-	-	-	-	-	-	-	-
	June	+	+	-	-	+	+	-	-	+	-	-	-	-	+	-	-	-
	July	+	+	-	-	+	+	-	-	+	-	-	+	-	+	-	+	-
	August	+	+	-	-	+	+	-	+	+	-	+	+	-	+	-	+	-
	September	+	-	+	-	+	+	-	+	+	-	+	+	-	+	-	+	-
	October	+	-	-	+	+	+	-	+	+	+	+	+	-	-	-	+	-
	November	+	-	-	+	+	+	-	+	+	+	+	+	-	-	-	-	-
	December	-	-	-	+	+	+	-	-	+	-	-	+	-	-	-	-	-

a. "+" indicates the site was surveyed in that month; see figures 2-5 for site locations.

b. Additional sites: Hepner's Bar in Region 3; Morrow's Bar in Region 4.

c. Additional sites: Byrne Road Bar in Region 1; Dewdney Bar in Region 2.

the same side of the aircraft. Angler counts were recorded on a study area map, and flight times were recorded for each region. Flights began at noon and required two hours.

DATA MANAGEMENT

Data storage and analysis were conducted on an IBM-AT compatible microcomputer. A data entry program (DPA Group Inc. MS 1985b) generated ASCII files which were imported into an analytic program (DPA Group Inc. MS 1986) for analysis.

The data were verified in three steps. First, all field data sheets were examined for compliance with study procedures. Second, the data entry program performed 31 automatic error checks, including duplication detection, code validity, and range and consistency verification. Third, a subset of the ASCII data files were imported to a spreadsheet program for verification with the field data sheets.

DATA ANALYSIS

Monthly estimates of the daily effort profile, angler effort, harvest by species and mark type, and release by species were generated by day type, bar and region. Estimates were generated from region-specific data, except Region 4 estimates also used Englebrich (Region 3) data because: a) minimal and dispersed angler effort made data collection difficult in Region 4; and b) Englebrich and Region 4 CPUE was not significantly different in most species/-month strata. Analytic procedures are discussed below; variance calculations are detailed in Appendix 17.

Angler Effort: Regional angler effort profiles were generated from hourly rod counts at the survey sites, with effort outside the survey shifts reconstructed from interview data. Hourly effort was weighted to compensate for the sampling imbalance which resulted from overlapping survey shifts.

Mean sample day angler effort (hours) for each stratum (region, month and day type) was the ratio of the mean overflight rod count and the proportion of daily effort occurring during the rod count time block. Total angler effort was the product of the mean daily angler effort and the number of days in the stratum. The mathematical relationships are reported below.

1) Estimated total rods fishing ($\hat{R}_{hj}$), by hour and day type (weekday or weekend):

$$\hat{R}_{hj} = \sum_i N_h / n_{hij} \sum_k r_{hijk}$$

2) Estimated proportion of daily angler effort occurring during the instantaneous rod count time block ($\bar{p}_{hj\bullet}$), by day type:

$$\bar{p}_{hj\bullet} = \frac{\hat{R}_{hj\bullet}}{\sum_j \hat{R}_{hj}}$$

3) Estimated mean rod count during the instantaneous rod count time block ($\bar{y}_{hj\bullet}$), by day type:

$$\bar{y}_{hj\bullet} = \sum_k \frac{y_{hj\bullet k}}{n_{hj\bullet}}$$

4) Estimated angler effort (E_h), by day type, in hours:

$$E_h = N_h \frac{\bar{y}_{hj\bullet}}{\bar{p}_{hj\bullet}}$$

5) Estimated study period angler effort (E), in hours:

$$E = \sum_h E_h$$

where:

N_h = total days of day type h (weekday or weekend) in the month;

n_{hij} = number of interview sample days on day type h at site i during hour j;

r_{hijk} = rod count on day type h at site i at hour j on day k;

$\hat{R}_{hj\cdot}$ = estimated total effort (hours) on day type h during the instantaneous rod count time block (j);

$y_{hj\cdot k}$ = instantaneous rod count on day type h on day k;

$n_{hj\cdot}$ = number of instantaneous rod counts on day type h.

Catch Per Unit Effort: CPUE was calculated by region and day type for each species and mark group using a total ratio estimator (Von Geldern, Jr. and Thomlinson 1973; Malvestuto 1983), i.e. the total estimated catch was divided by the total estimated effort (to time of interview). Estimates were derived from interview data weighted by the proportion of monthly stints which were surveyed (the day was divided into three stints: the period of overlap between a.m. and p.m. shifts, and the a.m. and p.m. shifts outside the overlap period) to account for sampling imbalances and for the proportion of anglers in each hour who left the site without an interview. CPUE was calculated separately for harvested (HPUE) and released (RPUE) fish; however, RPUE was not calculated by mark type because angler mark recognition was considered unreliable. The mathematical relationships are reported below.

6) Estimated monthly catch to time of interview at the survey sites ($\hat{X}_h$), by region and day type:

$$\hat{X}_h = \sum_I \sum_I \frac{1}{a_{hil}} \sum_f \sum_q \sum_u \frac{x_{hilfqu}}{a_{hilfq}}$$

7) Estimated monthly angler hours to time of interview at the survey sites (T_h) by region and day type:

$$\hat{T}_h = \sum_I \sum_I \frac{1}{a_{hil}} \sum_f \sum_q \sum_u \frac{t_{hilfqu}}{a_{hilfq}}$$

8) Estimated catch per angler hour at the survey sites ($\bar{c}_h$), by region and day type:

$$\bar{c}_h = \frac{\hat{X}_h}{\hat{T}_h}$$

where:

a_{hil} = proportion of monthly stints of type l for site i on day type h which were surveyed;

a_{hilfq} = proportion of anglers leaving in time block q on stint f of stint type l at site i on day type h who were interviewed;

x_{hilfqu} = catch to time of interview by angler u leaving in time block q on stint f of stint type l at site i on day type h;

t_{hilfqu} = hours fished to time of interview by angler u leaving in time block q on stint f of stint type l at site i on day type h.

Before calculating CPUE, the raw interview data were tested for significant differences in CPUE between all interviews and complete trip interviews. The test used, from Cochran (1977), was:

9) Estimated variance of the difference between two ratios ($\mathrm{Var}(\bar{c}_c - \bar{c}_t)$):

$$Var(\bar{c}_c - \bar{c}_t) = Var(\bar{c}_c) + Var(\bar{c}_t)$$

where:

$\mathrm{Var}(\bar{c}_c)$ = variance of CPUE from complete trip interviews:

$$\frac{1}{n(n-1)\bar{t}^2}\left(\sum x_u^2 - 2\bar{c}_c\sum x_u t_u + \bar{c}_u^2\sum t_u^2\right)$$

$\mathrm{Var}(\bar{c}_t)$ = variance of CPUE from all interviews, calculated as above.

$\bar{t}$ = mean time to interview.

If $(\bar{c}_c - \bar{c}_t) \pm (\text{t-table, } 0.95)(\mathrm{Var}(\bar{c}_c - \bar{c}_t))$ did not include zero, the difference was significant; incomplete trip interviews were excluded from the analysis for that site.

Harvest and Release: Monthly regional harvest and release, estimated by species and mark group, was the sum of the weekday and weekend/holiday strata estimates. For each stratum, harvest and release was the product of stratum effort and the corresponding value of HPUE or RPUE.

10) Total monthly regional catch (C):

$$C = \sum_h \bar{c}_h E_h$$

Harvest Rate: When run timing and total abundance were known (coho and chinook adults only), the harvest rate was the ratio of the estimated harvest and the sum of the estimated harvest and the observed escapement (provided by field staff). Harvest rates were not calculated for other species because total abundance was unknown.

Angler Characteristics: The following unweighed angler attributes were summarized by site and week: party size, mean angler day length (from complete trip, incomplete trip and all interviews), preferred species and gear type. Study period mean angler day length, calculated from complete trip interviews, was estimated from site-specific data weighted by estimated angler effort.

RESULTS

A total of 57,124 angler interviews and 202 overflights were conducted in 1985-1988. Catches during the four year study included chinook (*Oncorhynchus tshawytscha*), coho (*O. kisutch*), sockeye (*O. nerka*), pink (*O. gorbusca*), chum (*O. keta*), steelhead and rainbow (*O. mykiss*), cutthroat (*Salmo clarki*), Dolly Varden (*Salvelinus malma*) and sturgeon (*Acipenser spp.*). Annual results are detailed below.

1985 FISHERY

Survey Effort

The 1985 study period, from September to November, included 62 weekdays and 29 weekend or holiday days of which 58% and 100%, respectively, were sampled. Angler interviews totalled 5,718, (Table 3a; Appendix 1) of which 12% were from Region 1, 48% from Region 2, 34% from Region 3 and 7% from Region 4 (Tables 3b, 3c). Monthly interviews ranged from 1,105 in December to 2,434 in October. Five sites had 76% of the interviews: Edgewater (29%), Englebrich (16%), Wing Dam (12%), Standard Gas (10%) and Duncan (9%) (Schubert 1992).

The surveyed bars accounted for 35% of the angler effort; interviews documented 6% of the angler effort (Table 3a). Survey efficiency, defined as the percent of the total angler effort which was interviewed, was highest in regions 2 and 3 (7%) (Tables 3b, 3c); only 3% of the Region 1 angler effort was interviewed during 1985 (Table 3b).

Twenty-two overflights were conducted in 1985 (Table 3a). Mean monthly rod counts ranged from 21

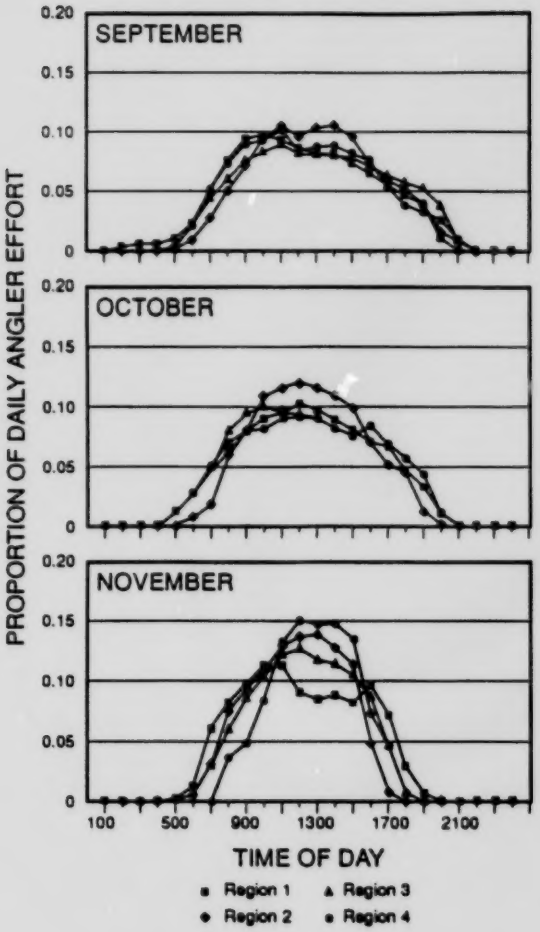

Figure 6
Hourly angler effort profiles, by month and region, in the 1985 Lower Fraser River sport fishery

(December) to 555 (October) on weekdays and 23 (December) to 949 (September) on weekends (Appendix 2). The peak rod count (1,382) occurred on October 6. Over 75% of the anglers were observed in regions 2 and 3.

Angler Effort

Daily Profile: Anglers fished through the daylight hours, with the angling day decreasing between September (5 a.m. to 9 p.m.) and December (6 a.m. to 6 p.m.) (Appendix 3; Fig. 6). Angler effort generally peaked between 10 a.m. and noon. Monthly profiles were similar between regions.

Total Angler Effort: Angler effort totalled 485,931 angler hours or 100,627 days (Table 3a), of which 18% occurred in Region 1, 35% in Region 2, 39% in Region 3 and 7% in Region 4 (Tables 3b, 3c). Monthly effort peaked in September (225,207 hours) (Table 3a), reflecting peaks in regions 3 and 4 (Table 3c; Fig. 7) which were the largest observed in the four year study. Effort in regions 1 and 2 peaked in October. Fifty-five percent of the effort occurred on weekdays. The five largest sites had 29% of the angler effort: Edgewater (7%), Wing Dam (7%), Englebrich (6%), Queen's Island (5%) and Duncan (4%) (Schubert 1992).

Catch Per Unit Effort

Chinook adult and jack CPUE, expressed as fish per hour, averaged 0.0015 and 0.0020, respectively. CPUE peaked in October (0.0023) for adults and September (0.0027) for jacks. Most catch was harvested. CPUE was highest in Region 3, in October (0.0061) for adults (Fig. 8) and September (0.0049) for jacks (Fig. 9). CPUE in other regions was negligable (Appendix 4). The average proportion of anglers harvesting at least one chinook per trip was 2% or less in any month; the highest proportion was 5% among Region 3 anglers in October (Table 4).

Coho adult and jack CPUE averaged 0.0070 and 0.0213, respectively, peaking in October at 0.0096 and 0.0365, respectively. Most catch was harvested. CPUE was highest in Region 1 (Appendix 4) in October for

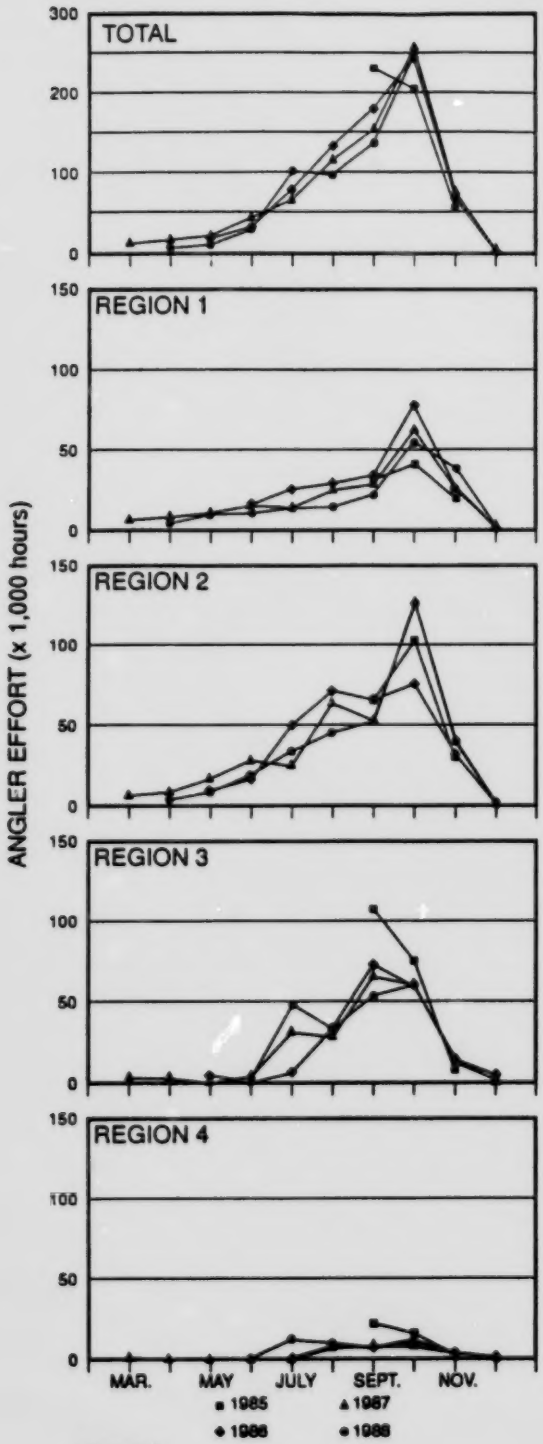

Figure 7
Angler effort, by region and year, in the 1985-88 Lower Fraser River sport fishery

both adults (0.0235)(Fig. 10) and jacks (0.1067) (Fig. 11). The average proportion of anglers harvesting at least one coho per trip ranged from 4% (September) to 16% (October), with jacks comprising most of the daily creel (Table 4). The highest proportion was 35% among Region 1 anglers in October.

Steelhead CPUE averaged 0.0021, peaking in October at 0.0037. Most catch was harvested. CPUE was highest in regions 3 (0.0078) and 4 (0.0087) in October (Fig. 12; Appendix 4). CPUE was negligable in Region 1 and peaked at only 0.0008 in Region 2. The average proportion of anglers harvesting at least one steelhead per trip was 2% or less in any month; the highest proportion was 6% among Region 3 anglers in October (Table 4).

Cutthroat CPUE averaged 0.0051, peaking in October at 0.0062. Most catch was harvested. CPUE was highest in Region 2 in October (0.0133) (Fig. 13; Appendix 4); CPUE in regions 3 and 4 was negligable. The average proportion of anglers harvesting at least one cutthroat per trip was 3% or less in any month; the highest proportion was 5% among Region 2 anglers in October (Table 4).

Dolly Varden CPUE averaged only 0.0005; all catch was harvested. CPUE was highest in Region 1 in September (0.0031) (Fig. 14), and was negligable in all other regions (Appendix 4).

Sturgeon CPUE averaged only 0.0003; all catch was released. CPUE was negligable in all regions and months (Fig. 15; Appendix 4).

Total Catch

Study area monthly harvest and release by species is reported Table

Table 3a. Monthly harvest, release, angler effort and survey effort in the 1985 lower Fraser River sport fishery.

	Sep	Oct	Nov	Total	
				Total	C.L.
Number of overflights	8	9	5	22	-
Number of interviews	2,179	2,434	1,105	5,718	-
Angler effort					
Hours	225,207	205,943	54,781	485,931	(71,577)
Days	42,720	42,950	14,956	100,627	-
% interviewed b	5.5%	6.3%	8.3%	6.2%	-
% at survey sites	31.4%	39.2%	29.3%	34.5%	-
Harvest					
Chinook adult	195	401	0	596	(202)
Chinook jack	611	348	8	967	(243)
Coho adult	996	1,980	427	3,403	(624)
Coho jack	1,017	7,517	1,691	10,225	(1,377)
Pink	277	42	0	319	(124)
Chum	16	10	0	26	(16)
Steelhead	134	707	58	899	(178)
Cutthroat	907	1,142	117	2,166	(422)
Dolly Varden	96	92	35	223	(96)
Release					
Chinook adult	63	69	0	132	(67)
Coho adult	16	0	0	16	(5)
Coho jack	106	0	0	106	(86)
Pink	2,910	3,377	6	6,293	(1,029)
Chum	552	227	27	806	(235)
Steelhead	42	60	6	108	(32)
Cutthroat	173	145	5	323	(160)
Sturgeon	78	41	5	124	(50)

a. 95% confidence limits.

b. Ratio of observed (from interviews) and estimated effort.

3a; regional data are reported in Tables 3b and 3c. Spatial and temporal catch patterns are summarized below for the species comprising the bulk of the catch. Bracketed percentages refer to percent of annual catch or, for monthly proportion released, percent of monthly catch (harvest plus release).

Chinook adults were caught in September and October, peaking in October (65%) (Fig. 8). Releases comprised 18% of the catch, with the highest proportion released in September (24%). Harvest occurred primarily in regions 3 (94%) and 2 (6%); releases occurred entirely in those regions.

Chinook jacks were caught in all months, peaking in September (63%) (Fig. 9). All catch was harvested. Fifteen percent of the harvest occurred in Region 2, peaking in October, and 82% in Region 3, peaking in September.

Table 3b. Monthly harvest, release and angler effort in regions 1 (George Massey Tunnel to Pitt River) and 2 (Pitt River to Sumas River) in the 1985 lower Fraser River sport fishery.

Region		Sep	Oct	Nov	Total	C.L. a
Region 1	Number of interviews	232	296	127	655	-
	Angler effort					
	Hours	30,704	40,933	17,181	88,818	(24,473)
	Days	7,676	9,519	5,924	23,120	-
	% interviewed b	3.0%	2.9%	2.2%	2.8%	-
	% at survey sites	17.1%	15.4%	7.8%	14.5%	-
	Harvest					
	Chinook jack	17	0	0	17	(29)
	Coho adult	330	963	0	1,293	(687)
	Coho jack	533	4,369	622	5,524	(1,771)
	Pink	229	0	0	229	(223)
	Cutthroat	220	212	0	432	(298)
	Dolly Varden	96	46	35	177	(186)
	Release					
	Coho jack	35	0	0	35	(76)
	Pink	71	0	0	71	(149)
	Steelhead	17	0	0	17	(29)
	Cutthroat	33	0	0	33	(57)
	Sturgeon	0	41	0	41	(61)
Region 2	Number of interviews	838	1,244	634	2,716	-
	Angler effort					
	Hours	66,597	76,564	28,393	171,554	(35,842)
	Days	14,799	14,724	6,603	36,126	-
	% interviewed b	5.7%	8.2%	9.7%	7.5%	-
	% at survey sites	35.1%	47.3%	32.1%	40.0%	-
	Harvest					
	Chinook adult	34	0	0	34	(53)
	Chinook jack	51	93	0	144	(107)
	Coho adult	297	877	411	1,585	(880)
	Coho jack	280	3,008	1,066	4,354	(2,023)
	Pink	0	42	0	42	(61)
	Chum	16	10	0	26	(32)
	Steelhead	16	65	0	81	(47)
	Cutthroat	687	873	113	1,673	(763)
	Dolly Varden	0	46	0	46	(22)
	Release					
	Chinook adult	63	6	0	69	(77)
	Coho adult	16	0	0	16	(29)
	Coho jack	71	0	0	71	(137)
	Pink	8	41	0	49	(45)
	Chum	486	71	0	557	(425)
	Steelhead	16	0	0	16	(20)
	Cutthroat	123	145	5	273	(190)
	Sturgeon	61	0	5	66	(73)

a. 95% confidence limits.

b. Ratio of observed (from interviews) and estimated effort.

Table 3c. Monthly harvest, release and angler effort in regions 3 (Sumas River to Harrison River) and 4 (Harrison River to Coquihalla River) in the 1985 lower Fraser River sport fishery.

Region		Sep	Oct	Nov	Total	C.L. a
Region 3	Number of interviews	914	732	302	1,948	-
	Angler effort					
	Hours	108,495	75,622	7,179	191,296	(55,951)
	Days	16,439	16,090	1,795	34,324	-
	% interviewed b	6.2%	6.3%	17.5%	6.7%	-
	% at survey sites	35.3%	47.1%	71.2%	41.3%	-
	Harvest					
	Chinook adult	161	397	0	558	(385)
	Chinook jack	532	252	8	792	(464)
	Coho adult	346	127	11	484	(499)
	Coho jack	170	136	3	309	(240)
	Pink	48	0	0	48	(96)
	Steelhead	104	531	49	684	(337)
	Cutthroat	0	57	4	61	(118)
	Release					
	Chinook adult	0	63	0	63	(104)
	Pink	1,975	2,504	4	4,483	(1,855)
	Chum	66	156	17	239	(178)
	Steelhead	9	60	4	73	(56)
	Cutthroat	12	0	0	12	(22)
	Sturgeon	12	0	0	12	(24)
Region 4	Number of interviews	195	162	42	399	-
	Angler effort					
	Hours	19,411	12,824	2,028	34,263	(10,443)
	Days	3,806	2,617	634	7,057	-
	% interviewed b	5.2%	6.0%	6.5%	5.6%	-
	% at survey sites	19.3%	20.5%	24.6%	20.1%	-
	Harvest					
	Chinook adult	0	4	0	4	(8)
	Chinook jack	11	3	0	14	(12)
	Coho adult	23	13	5	41	(28)
	Coho jack	34	4	0	38	(30)
	Steelhead	14	111	9	134	(81)
	Release					
	Pink	856	832	2	1,690	(776)
	Chum	0	0	10	10	(12)
	Steelhead	0	0	2	2	(5)
	Cutthroat	5	0	0	5	(11)
	Sturgeon	5	0	0	5	(10)

a. 95% confidence limits.

b. Ratio of observed (from interviews) and estimated effort.

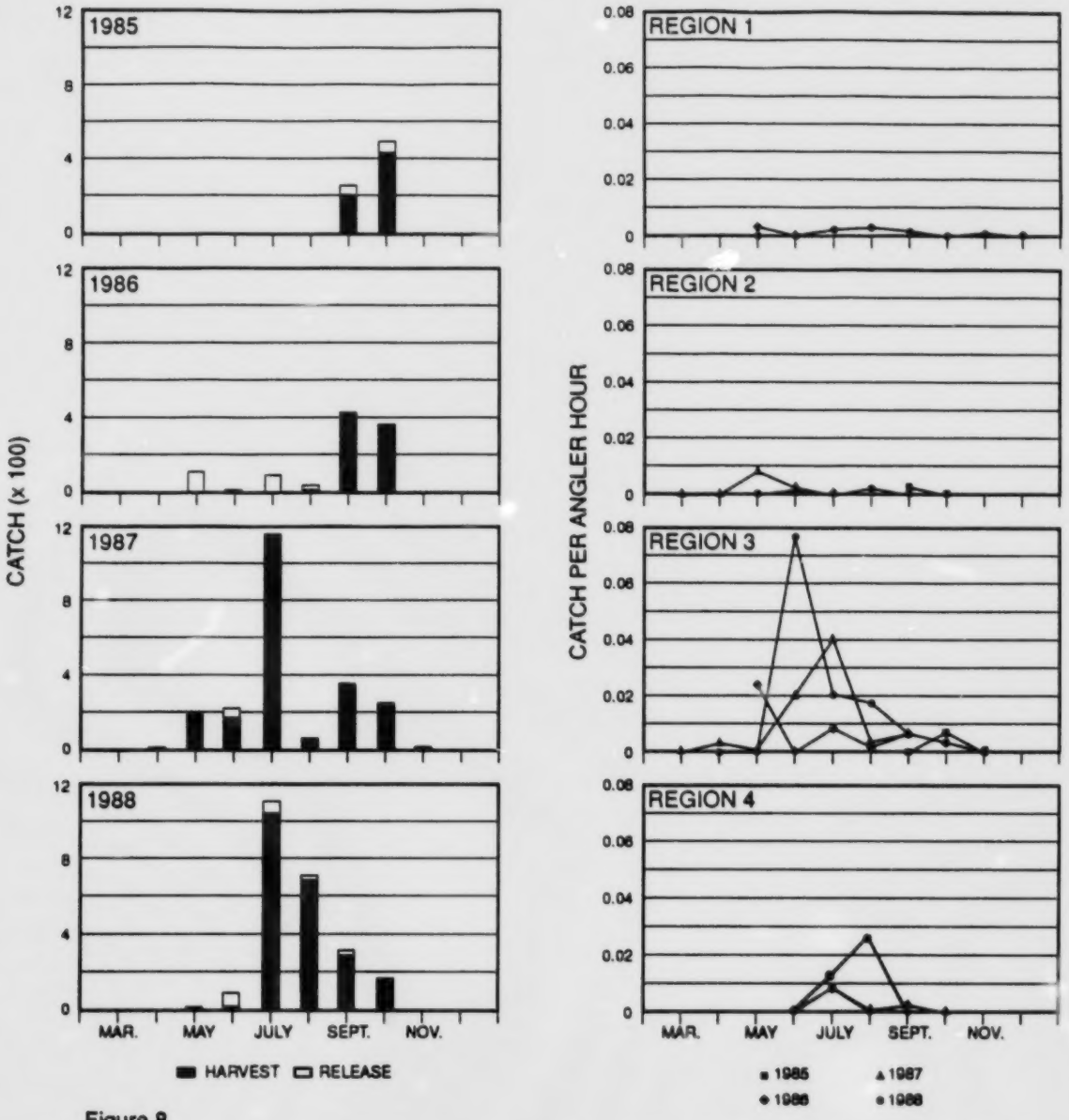

Figure 8
Chinook adult catch (harvest and release), by year, and chinook adult catch per unit effort, by region and year, in the 1985-88 Lower Fraser River sport fishery

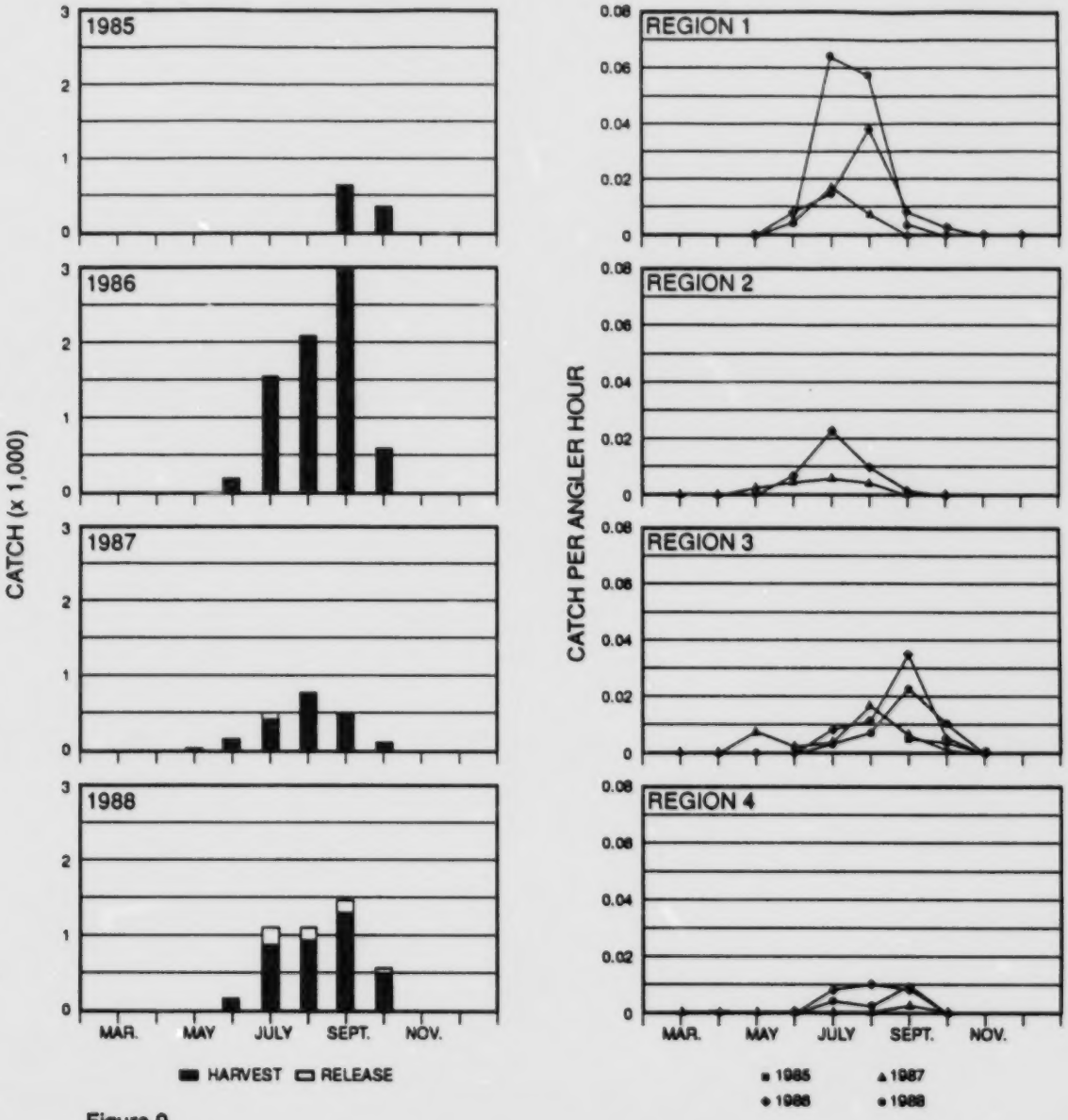

Figure 9
Chinook jack catch (harvest and release), by year, and chinook jack catch per unit effort, by region and year, in the 1985-88 Lower Fraser River sport fishery

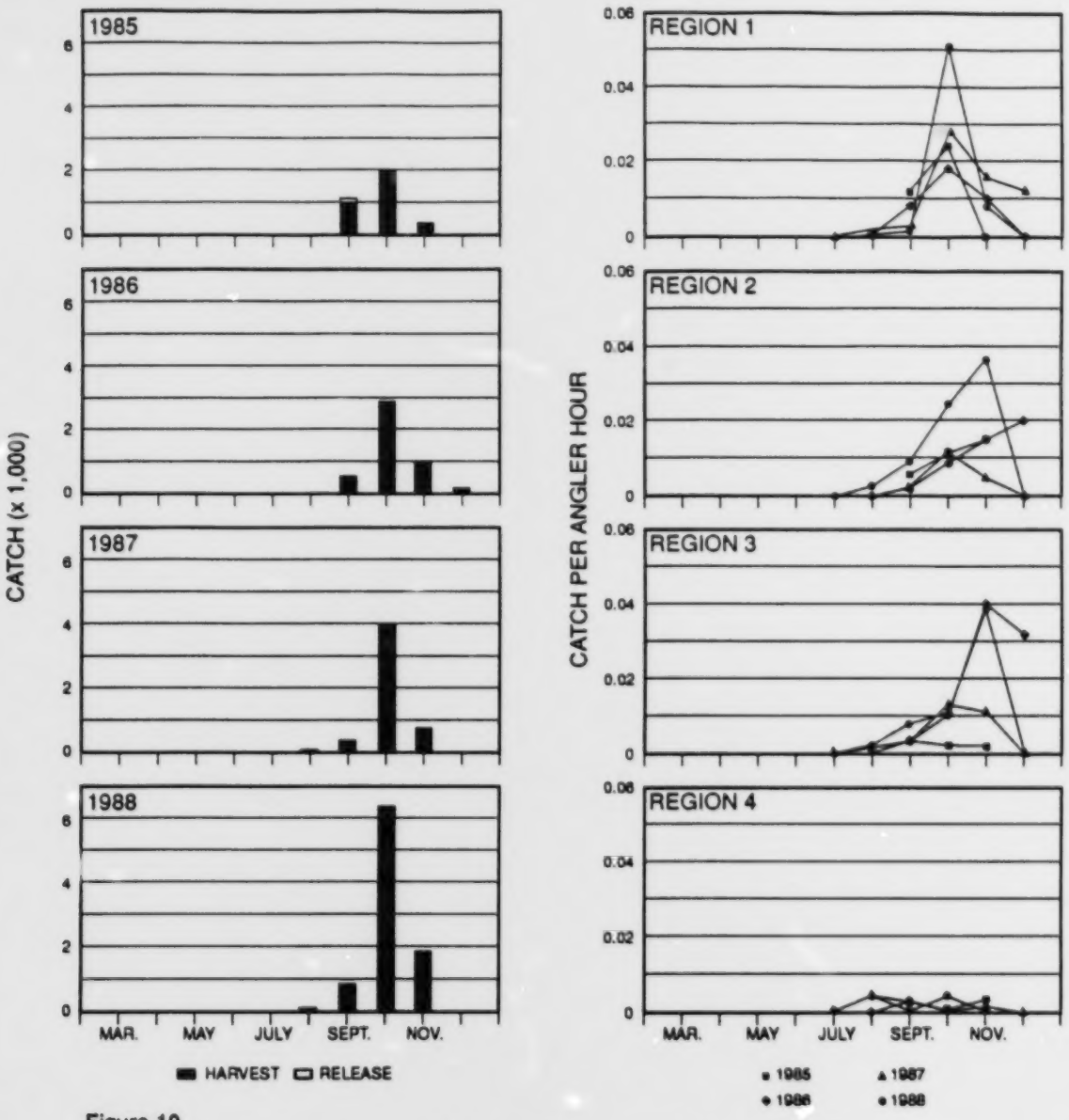

Figure 10
Coho adult catch (harvest and release), by year, and coho adult catch per unit effort, by region and year, in the 1985-88 Lower Fraser River sport fishery

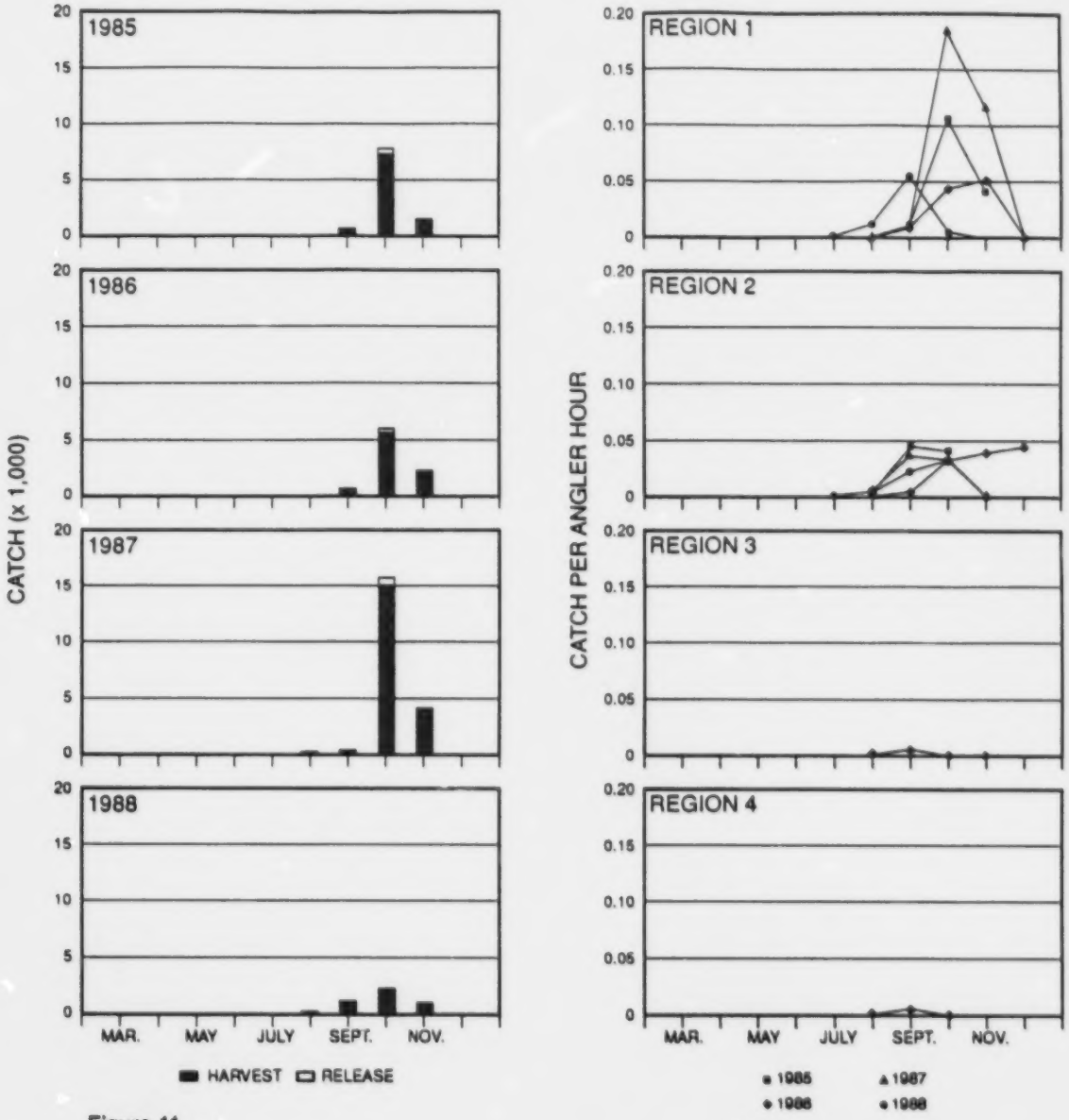

Figure 11
Coho jack catch (harvest and release), by year, and coho jack catch per unit effort, by region and year, in the 1985-88 Lower Fraser River sport fishery

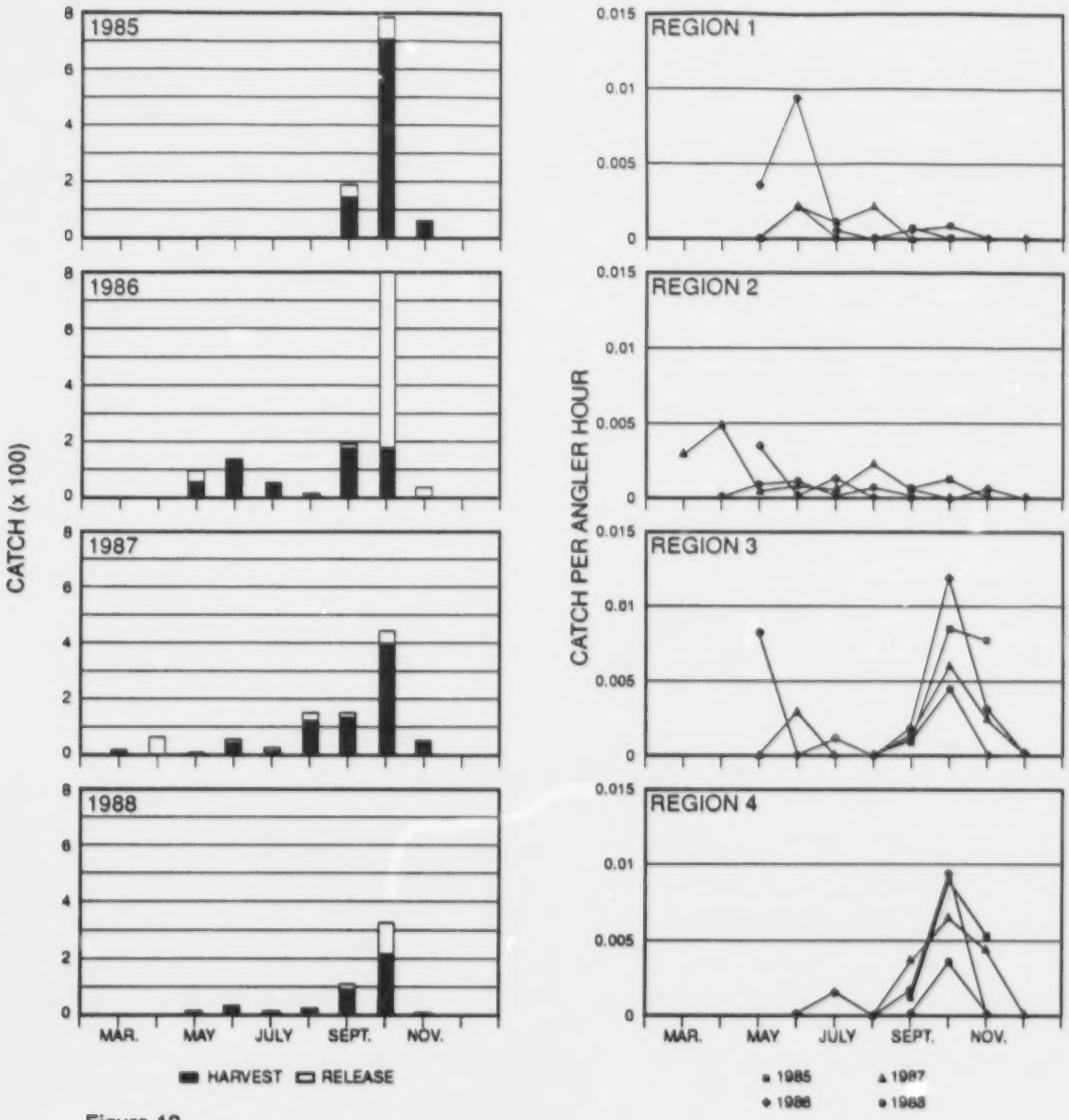

Figure 12
Steelhead catch (harvest and release), by year, and steelhead catch per unit effort, by region and year, in the 1985-88 Lower Fraser River sport fishery

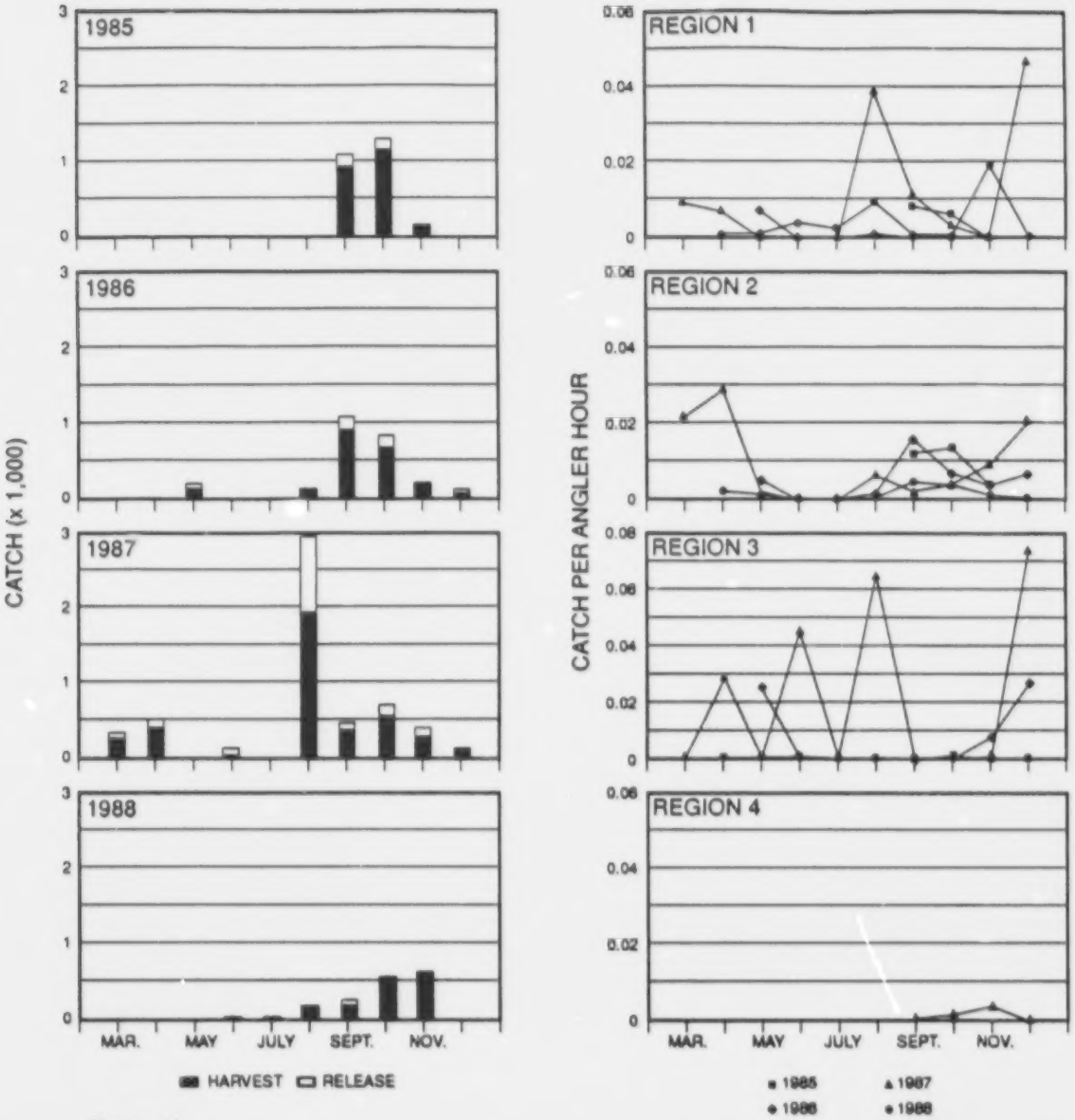

Figure 13
Cutthroat catch (harvest and release), by year, and cutthroat catch per unit effort, by region and year, in the 1985-88 Lower Fraser River sport fishery

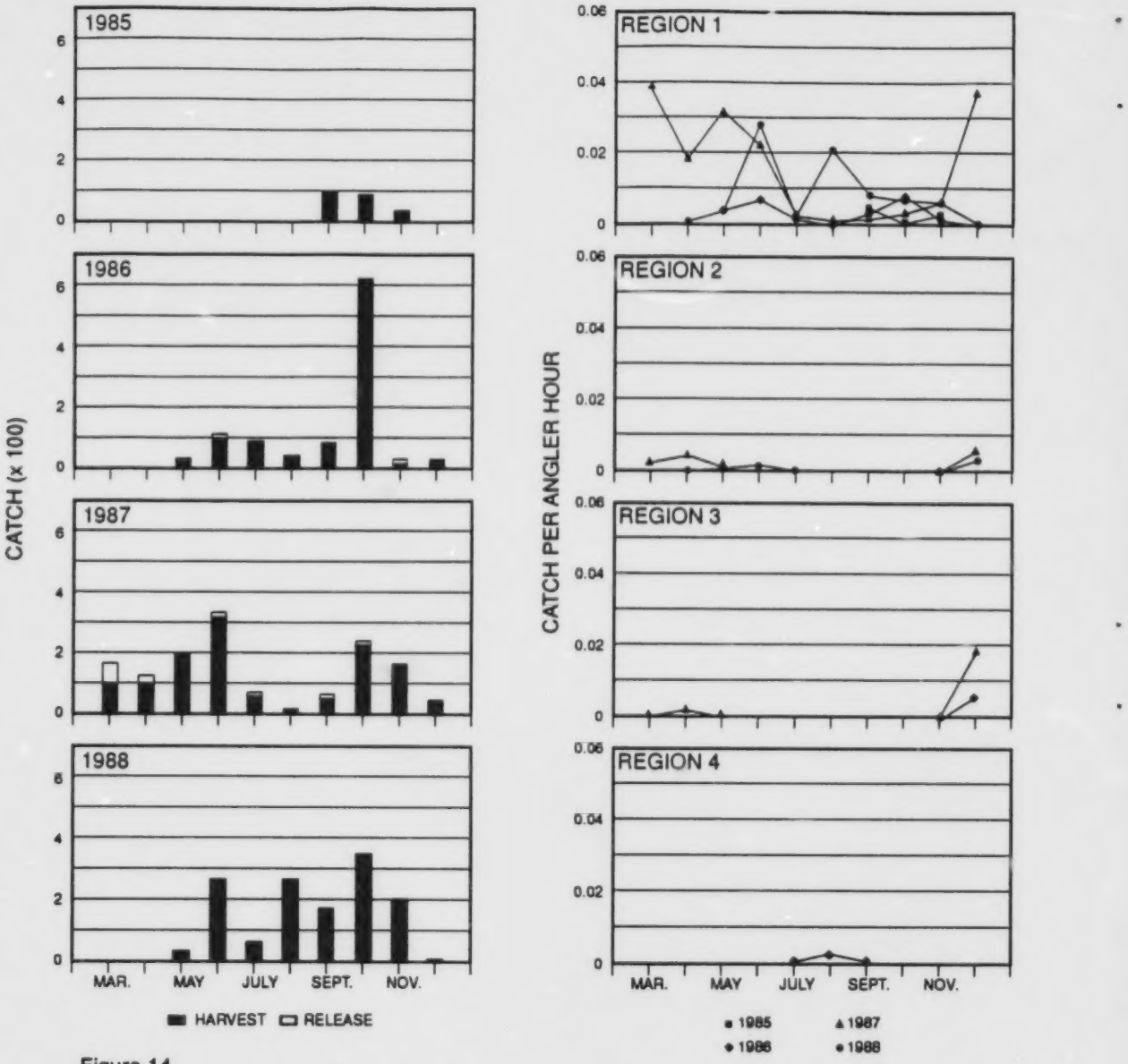

Figure 14
Dolly Varden catch (harvest and release), by year, and Dolly Varden catch per unit effort, by region and year, in the 1985-88 Lower Fraser River sport fishery

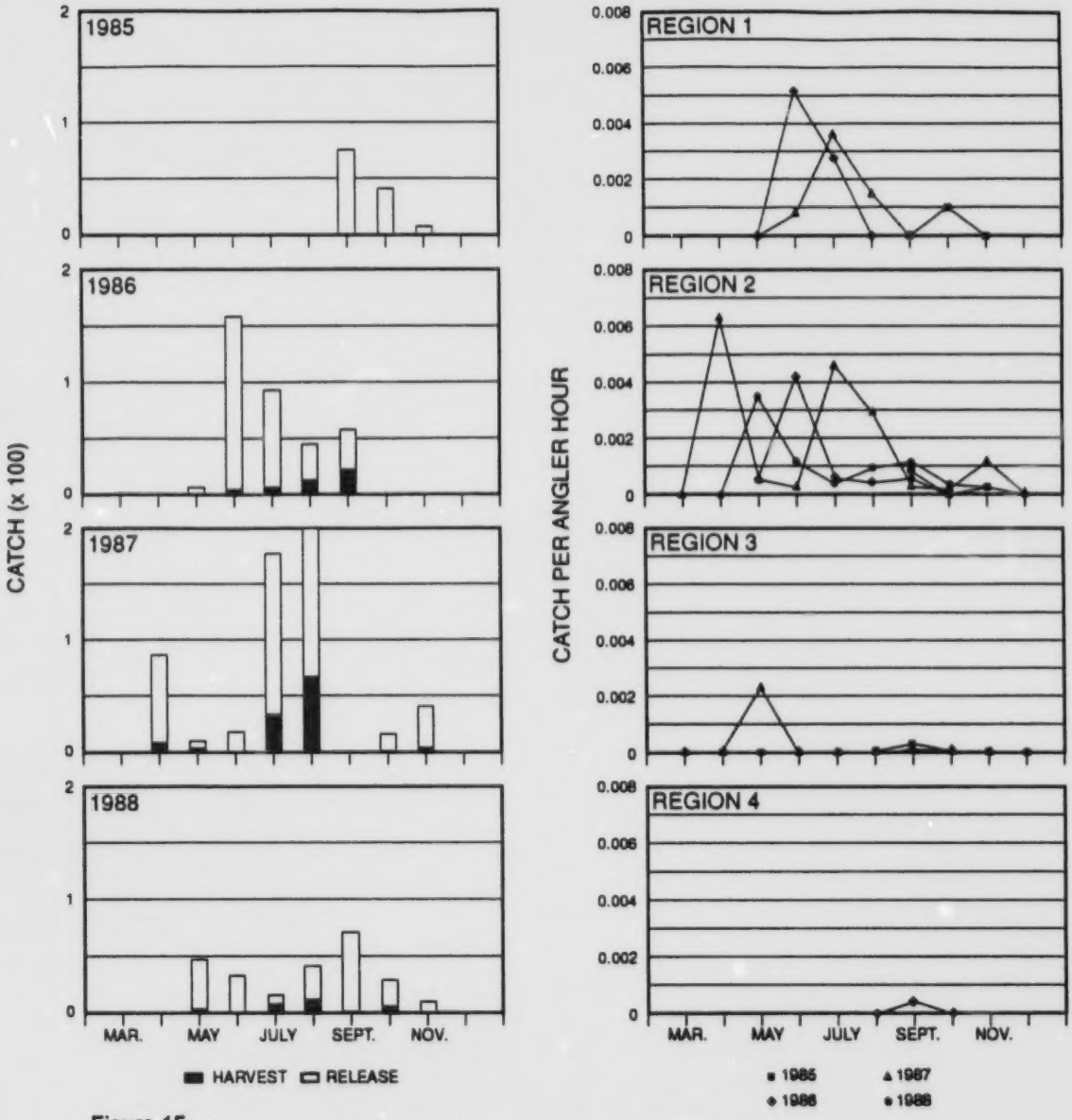

Figure 15
Sturgeon catch (harvest and release), by year, and sturgeon catch per unit effort, by region and year, in the 1985-88 Lower Fraser River sport fishery

Table 4. Distribution of harvest among anglers, by region and month, in the 1985 lower Fraser River sport fishery. a

Region	Month	No. of inter-views	Percent of anglers harvesting: 0 fish	1 fish	2 fish	3 fish	4 fish	>4 fish	Percent of anglers harvesting at least one: Chinook adult	Chinook jack	Coho adult	Coho jack	Steel-head	Cut-throat
Region 1	Sep	210	85%	11%	2%	1%	0%	0%	0%	0%	4%	6%	0%	3%
	Oct	223	68%	17%	6%	6%	2%	1%	0%	0%	8%	27%	0%	1%
	Nov	71	90%	7%	3%	0%	0%	0%	0%	0%	0%	8%	0%	0%
Region 2	Sep	462	92%	7%	1%	0%	0%	0%	1%	0%	2%	2%	0%	3%
	Oct	656	77%	15%	7%	1%	0%	0%	0%	1%	5%	15%	1%	5%
	Nov	367	79%	16%	4%	0%	0%	0%	0%	0%	6%	15%	0%	2%
Region 3	Sep	378	94%	6%	1%	0%	0%	0%	1%	2%	2%	1%	1%	0%
	Oct	413	86%	12%	1%	0%	0%	0%	3%	2%	2%	1%	6%	1%
	Nov	197	95%	5%	0%	0%	0%	0%	0%	0%	1%	0%	3%	0%
Region 4	Sep	129	98%	2%	0%	0%	0%	0%	0%	1%	0%	1%	0%	0%
	Oct	100	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Nov	24	92%	8%	0%	0%	0%	0%	0%	0%	4%	0%	4%	0%
Total	Sep	1,179	92%	7%	1%	0%	0%	0%	0%	1%	2%	2%	1%	2%
	Oct	1,392	80%	13%	5%	2%	0%	0%	1%	1%	4%	12%	2%	3%
	Nov	659	86%	12%	3%	0%	0%	0%	0%	0%	4%	9%	1%	1%

a. Data from complete trip interviews only.

Table 5. Monthly harvest of marked fish, by species and mark type, in the 1985 lower Fraser River sport fishery.

Species	Mark type a	Sep	Oct	Nov	Total Catch	Total C.L. b
Chinook jack	AFC	63	5	0	68	(75)
Coho adult	AFC	57	69	3	129	(98)
Coho jack	AFC	24	624	71	719	(649)
	LPC	0	213	49	262	(184)
	RPC	0	1,561	622	2,183	(1,109)
Steelhead	AFC	0	4	0	4	(6)
Cutthroat	AFC	183	13	0	196	(131)
	LMC	9	108	0	117	(119)
	RMC	0	9	0	9	(8)

a. Mark types are: AFC - adipose fin clip; LPC/RPC - left or right pelvic fin clip; LMC/RMC - left or right maxillary clip.

b. 95% confidence limits.

Coho adults were caught in all months, peaking in October (58%) (Fig. 10). Less than 1% were released. Harvest occurred in regions 2 (47%) and 1 (38%), with 14% in Region 3. Catch in Region 3 peaked in September, one month earlier than in regions 1 and 2.

Coho jacks were caught in all months, peaking in October (73%) (Fig. 11). Only 1% were released. Harvest occurred in regions 1 (54%) and 2 (43%), with 3% in Region 3. Catch in Region 3 peaked in September, one month earlier than in regions 1 and 2.

Steelhead were caught in all months, peaking in October (76%) (Fig. 12). Releases comprised 11% of the catch, with the highest proportion released in September (24%). Thirty-one percent of the releases occurred in regions 1 and 2, 68% in Region 3. Harvest occurred in regions 3 (76%) and 4 (15%). The 1985 harvest was the largest observed in the four year study (Table 19).

Cutthroat were caught in all months, peaking in October (52%) (Fig. 13). Releases comprised 13% of the catch, with the highest proportion released in September (16%). Harvest occurred in region 2 (77%) and 1 (20%); 95% of the releases also occurred in these regions.

Dolly Varden were caught in all months (Fig. 14), peaking in September (43%). All were harvested, with harvest occurring primarily in Region 1 (79%).

Sturgeon were caught in all months (Fig. 15), primarily in regions 1 (33%) and 2 (53%). Total catch was minor; all were released.

Marked Catch

The estimated harvest marked by the removal of the adipose fin, left or right pelvic fin, and left or right maxillary bone is reported in Table 5. The adipose fin clip incidence was 0.000 for chinook adults, 0.070 for chinook jacks, 0.038 for coho adults, 0.070 for coho jacks, 0.004 for steelhead and 0.090 for cutthroat. The pelvic fin clip incidence for coho jacks was 0.026 (left) and 0.214 (right). The maxillary clip incidence for cutthroat was 0.054 (left) and 0.004 (right).

Angler Characteristics

The average angler trip ranged from 2.9 to 5.6 hours (Table 6). Trip length decreased through the study and was longest in Region 3.

Anglers attempted to harvest coho (39%), trout (12%) or chinook (1%); 48% expressed no species preference. In regions 1 and 2, 62% angled for coho with the proportion increasing over the study (Table 6). In regions 3 and 4, over 27% angled for trout, with the proportion decreasing over the study.

Bait (60%) was the most commonly used gear, followed by lures (36%) and bait/lure combinations (4%). Less than 1% used flies. In regions 3 and 4, lures or bait/lure combinations were the preferred gear (Table 6).

1986 FISHERY

Survey Effort

The 1986 study period, from May to December, included 167 weekdays and 78 weekend or holiday days of which 57% and 100%, respectively, were sampled. Angler interviews totalled 18,121 (Table 7a; Appendix 5), of which 16% were from Region 1, 56% from Region 2, 26% from Region 3 and 1% from Region 4 (Tables 7b-7e). Monthly interviews ranged from 220 in December to 4,494 in September. Five

Table 6. Angler characteristics in the 1985 lower Fraser River sport fishery.

		Region 1			Region 2		
		Sep-Oct	Nov-Dec	Total	Sep-Oct	Nov-Dec	Total
Mean angler day length (hr.)		4.2	2.9	4.0	4.9	4.3	4.7
Target species:	- Chinook	0.0%	0.0%	0.0%	0.3%	0.0%	0.2%
	- Coho	55.3%	87.4%	61.5%	56.9%	75.9%	61.3%
	- Other salmon	0.0%	0.0%	0.0%	0.3%	0.0%	0.2%
	- Trout a	0.2%	0.0%	0.5%	0.5%	0.5%	0.5%
	- Sturgeon	0.8%	0.0%	0.6%	0.0%	0.0%	0.0%
	- Anything	43.4%	12.6%	37.4%	42.0%	23.7%	37.7%
Gear:	- Bait	99.4%	99.2%	99.4%	99.0%	97.9%	98.8%
	- Lure	0.2%	0.8%	0.3%	0.7%	1.1%	0.8%
	- Bait/Lure	0.0%	0.0%	0.0%	0.3%	0.9%	0.4%
	- Fly	0.4%	0.0%	0.3%	0.0%	0.0%	0.0%

a. Includes steelhead, rainbow, cutthroat and Dolly Varden.

Continued

Table 6 continued. Angler characteristics in the 1985 lower Fraser River sport fishery.

		Region 3			Region 4		
		Sep-Oct	Nov-Dec	Total	Sep-Oct	Nov-Dec	Total
Mean angler day length (hr.)		5.6	4.0	5.3	5.0	3.2	4.8
Target species:	- Chinook	2.4%	0.0%	2.0%	7.8%	0.0%	7.0%
	- Coho	6.6%	10.2%	7.2%	8.7%	28.6%	10.8%
	- Other salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	- Trout a	28.1%	22.3%	27.2%	29.1%	23.8%	28.5%
	- Sturgeon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	- Anything	62.9%	67.1%	63.5%	54.3%	47.6%	53.6%
Gear:	- Bait	2.6%	2.6%	2.6%	5.9%	2.4%	5.5%
	- Lure	88.4%	89.7%	88.6%	77.0%	81.0%	77.4%
	- Bait/Lure	9.0%	7.6%	8.8%	17.1%	16.7%	17.0%
	- Fly	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

a. Includes steelhead, rainbow, cutthroat and Dolly Varden.

sites had 79% of the interviews: Edgewater (32%), Brownsville (13%), Duncan (13%), Englebrich (11%) and Standard Gas (10%) (Schubert 1992).

The surveyed bars accounted for 38% of the angler effort; interviews documented 13% of the angler effort (Table 7a). Survey efficiency was highest in regions 2 and 3 where 16% of the angler effort was interviewed (Tables 7c, 7d); only 6% and 4% of the effort in regions 1 and 4, respectively, was interviewed during the 1986 study (Tables 7b, 7e).

Sixty overflights were conducted in 1986 (Table 7a). Mean monthly rod counts ranged from 47 (December) to 789 (October) on weekdays and 41 (April) to 1,185 (October) on weekends (Appendix 6). The peak rod count (1,494) occurred on October 19. Region 2 had the highest angler count in most months.

Angler Effort

Daily Profile: Anglers fished from 5 a.m. to 10 p.m. or later (Appendix 7; Fig. 16), with a shorter angling day late in the study due to the reduced daylight period. Angler effort generally peaked between 10 a.m. and 2 p.m. Monthly profiles were similar between regions, except early or late in the study when small samples produced irregular profiles.

Total Angler Effort: Angler effort totalled 771,595 angler hours or 156,830 days (Table 7a), of which 26% occurred in Region 1, 46% in Region 2, 24% in Region 3 and 4% in Region 4 (Tables 7b-7e). Effort peaked in October (247,063 hours) (Table 7a), although Region 3 effort peaked in September (Table 7d; Fig. 7). Fifty-two percent of the effort occurred on weekdays. The five largest sites had 29% of the angler effort: Edgewater (11%), Duncan (5%), Bowman's (5%), Brownsville (4%) and Wing Dam (4%) (Schubert 1992).

Catch Per Unit Effort

Chinook adult and jack CPUE averaged 0.0013 and 0.0096, respectively. CPUE was highest in the spring and summer, peaking in May (0.0041) for adults and July (0.0192) for jacks. Except in May (0.0041 adult RPUE) and July (0.0011 adult RPUE), most catch was harvested. CPUE was highest in Region 3 in October (0.0057) for adults (Fig. 8) and in Region 1 in August (0.0381) for jacks (Fig. 9). Adult CPUE in other regions was negligible; however, comparable jack CPUE was noted in other regions (Appendix 8). The average proportion of anglers harvesting at least one chinook per trip ranged from 0% (November-December) to 9% (July), with jacks comprising most of the daily creel (Table 8). The highest proportion was 13% among Region 3 anglers in September.

Coho adult and jack CPUE averaged 0.0060 and 0.0126, respectively. CPUE was highest in the fall, peaking in December (0.0165) for adults and November (0.0380) for jacks. Most catch was harvested; RPUE was minor for both groups. CPUE was highest in Region 3 (Appendix 8) in November (0.0401) for adults (Fig. 10) and in Region 1 in November (0.0520) for jacks (Fig. 11). Adult CPUE was comparable in Region 3 and considerably lower in other regions; coho jack CPUE was considerably lower in other regions. The average proportion of anglers harvesting at least one coho per trip ranged from 0% in the spring and summer to 18% in November, with jacks generally comprising most of the daily creel (Table 8). The highest proportion was 26% among Region 1 anglers in November.

Steelhead CPUE averaged 0.0017 and tended to be highest in the fall, although overall CPUE peaked in June (0.0041). Most catch was harvested, except in October (0.0026) and November (0.0005) when the steelhead fish-

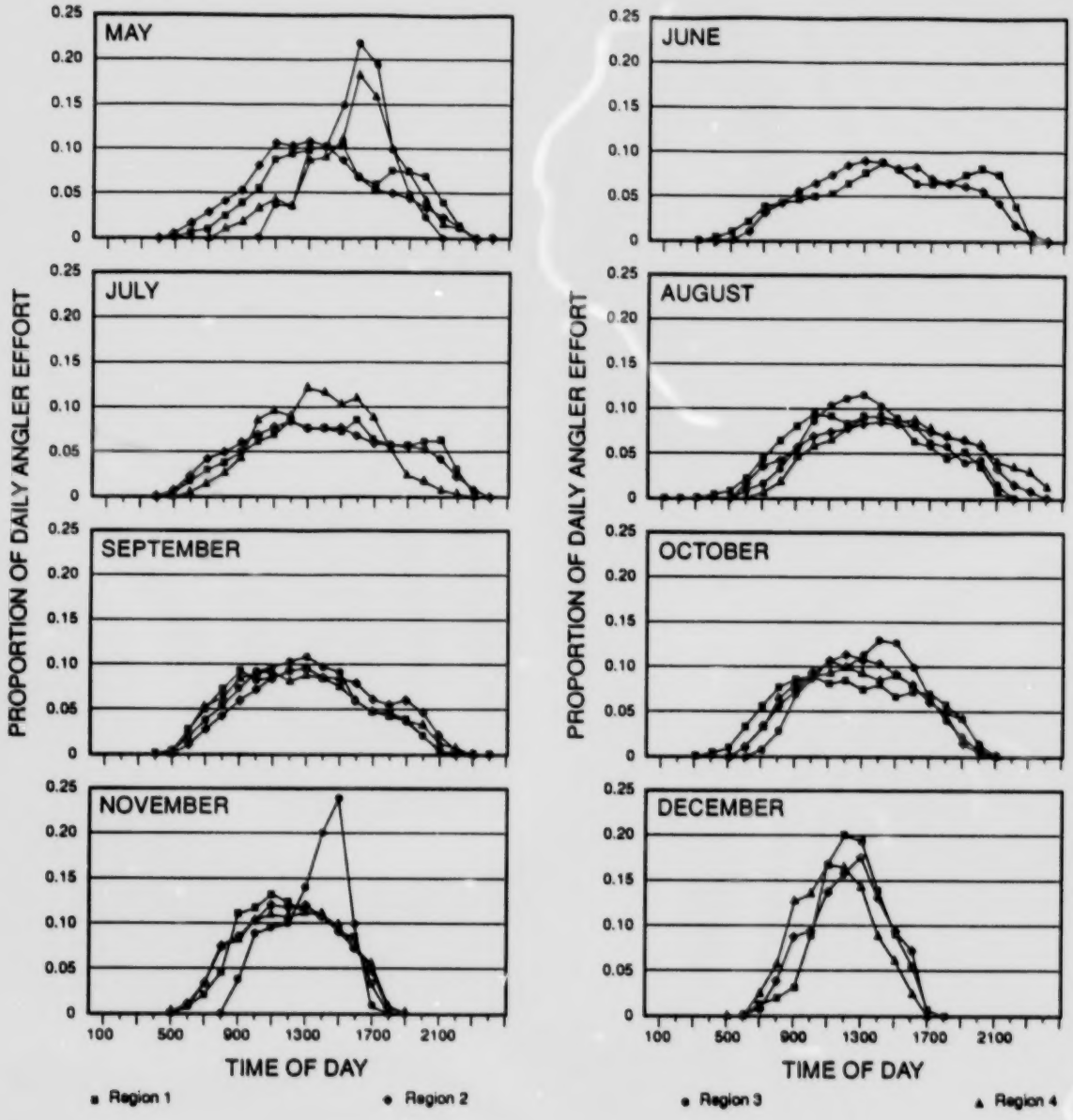

Figure 16
Hourly angler effort profiles, by month and region, in the 1986 Lower Fraser River sport fishery

Table 7a. Monthly harvest, release, angler effort and survey effort in the 1986 lower Fraser River sport fishery.

	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total Number	Total C.L. a
Number of overflights	4	8	10	10	10	10	6	2	60	-
Number of interviews	934	1,425	3,022	3,269	4,494	3,852	905	220	18,121	-
Angler effort										
Hours	24,677	35,546	80,372	134,536	178,708	247,063	61,502	9,191	771,595	(51,339)
Days	5,589	7,899	14,966	27,027	36,382	47,272	14,651	3,043	156,830	-
% interviewed b	17.5%	18.5%	20.0%	13.2%	13.8%	9.2%	6.6%	8.8%	12.6%	-
% at survey sites	44.4%	38.9%	49.8%	31.0%	39.7%	35.5%	42.3%	33.5%	38.1%	-
Harvest										
Chinook adult	0	5	2	22	429	358	0	0	816	(223)
Chinook jack	16	205	1,530	2,038	2,963	609	0	0	7,361	(1,002)
Coho adult	0	0	0	0	569	2,873	1,004	152	4,598	(1,391)
Coho jack	0	0	12	68	922	5,893	2,239	77	9,211	(2,312)
Chum	0	0	0	0	10	134	33	7	184	(226)
Steelhead	53	143	58	0	164	158	0	0	576	(176)
Rainbow	9	11	0	0	145	13	22	28	228	(178)
Cutthroat	138	0	0	112	944	647	177	80	2,098	(761)
Dolly Varden	27	103	89	45	73	628	14	30	1,009	(663)
Sturgeon	0	5	9	14	21	0	0	0	49	(37)
Release										
Chinook adult	101	3	86	26	0	7	0	0	223	(110)
Chinook jack	0	0	14	24	37	3	0	0	78	(35)
Coho adult	0	0	0	0	25	13	5	0	43	(25)
Coho jack	0	0	0	0	17	431	96	1	545	(519)
Sockeye	0	0	0	12	15	4	0	0	31	(24)
Pink	0	0	0	0	9	0	0	0	9	(16)
Chum	0	0	0	0	60	310	72	14	456	(268)
Steelhead	42	2	5	14	20	645	29	0	757	(342)
Rainbow	0	0	9	0	0	0	0	0	9	(16)
Cutthroat	48	9	6	4	96	138	17	26	344	(180)
Dolly Varden	6	7	0	0	0	0	18	0	31	(17)
Sturgeon	6	155	82	28	34	0	0	0	305	(117)

a. 95% confidence limits.

b. Ratio of observed (from interviews) and estimated effort.

ery was closed to conserve Thompson River steelhead. CPUE was highest in regions 3 (0.0121) and 4 (0.0093) in October and in Region 1 (0.0093) in June (Fig. 12; Appendix 8). The average proportion of anglers harvesting at least one steelhead per trip was 1% or less in any month; the highest proportion was 2% in several time-area strata (Table 8).

Cutthroat CPUE averaged 0.0032 and was variable through the year. Most catch was harvested; RPUE was only 0.0004. CPUE was highest in Region 3 in May (0.0239) and December

Table 7b. Monthly harvest, release and angler effort in Region 1 (Strait of Georgia to Pitt River) in the 1986 lower Fraser River sport fishery.

	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Region 1 Total Number	Region 1 Total C.L. a
Number of interviews	209	390	708	687	425	353	120	18	2,910	-
Angler effort										
Hours	5,327	14,972	21,661	25,099	34,229	76,357	22,668	2,854	203,167	(37,818)
Days	1,665	3,652	4,923	5,837	8,777	15,271	4,445	664	45,233	-
% interviewed b	11.0%	9.1%	12.8%	10.6%	4.6%	2.3%	2.7%	2.6%	5.6%	-
% at survey sites	36.1%	30.3%	54.3%	33.8%	13.0%	14.2%	16.4%	14.3%	22.7%	-
Harvest										
Chinook jack	0	118	310	945	297	185	0	0	1,855	(531)
Coho adult	0	0	0	0	254	1,340	225	0	1,819	(1,292)
Coho jack	0	0	0	0	334	2,901	1,082	0	4,317	(2,366)
Chum	0	0	0	0	0	121	0	0	121	(223)
Steelhead	9	137	10	0	0	0	0	0	156	(118)
Rainbow	9	11	0	0	61	0	0	0	81	(67)
Cutthroat	0	0	0	20	30	11	0	0	61	(57)
Dolly Varden	23	76	59	6	66	564	0	0	794	(657)
Release										
Chinook adult	18	0	0	0	0	0	0	0	18	(35)
Chinook jack	0	0	10	12	0	0	0	0	22	(25)
Coho adult	0	0	0	0	12	0	0	0	12	(18)
Coho jack	0	0	0	0	12	415	96	0	523	(535)
Steelhead	8	2	0	0	0	0	0	0	10	(14)
Rainbow	0	0	9	0	0	0	0	0	9	(16)
Cutthroat	36	0	6	0	0	0	0	0	42	(67)
Dolly Varden	0	7	0	0	0	0	18	0	25	(35)
Sturgeon	0	77	59	0	0	0	0	0	136	(92)

a. 95% confidence limits.

b. Ratio of observed (from interviews) and estimated effort.

(0.0258) and in Region 2 in September (0.0155) (Fig. 13; Appendix 8); CPUE in Regions 4 was 0.0000. The average proportion of anglers harvesting at least one cutthroat per trip ranged from 0% (June/July) to 3% (November) (Table 8). The highest proportion was 5% among Region 2 anglers in September and Region 3 anglers in November.

Dolly Varden CPUE averaged 0.0013; virtually all catch was harvested. CPUE was highest in Region 1 in October (0.0074) (Fig. 14); CPUE was negligable in other regions (Appendix 8).

Sturgeon CPUE averaged only 0.0005; most catch was released. CPUE peaked in regions 1 (0.0051) and 2 (0.0043) in June (Fig. 15; Appendix 8). CPUE was negligable in other regions.

Total Catch

Study area monthly harvest and release by species is reported Table 7a; regional data are reported in

Table 7c. Monthly harvest, release and angler effort in Region 2 (Pitt River to Sumas River) in the 1986 lower Fraser River sport fishery.

	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Region 2 Total Number	Region 2 Total C.L. a
Number of interviews	694	1,031	2,135	2,150	1,501	1,968	586	136	10,201	-
Angler effort										
Hours	15,304	19,511	49,296	70,450	64,853	102,752	27,168	1,784	351,118	(32,556)
Days	3,061	3,982	8,499	13,292	13,799	20,147	6,966	892	70,639	-
% interviewed b	23.5%	26.6%	24.8%	18.2%	11.1%	10.1%	9.2%	27.2%	15.5%	-
% at survey sites	55.9%	47.5%	52.5%	36.2%	39.3%	43.8%	57.3%	76.8%	44.6%	-
Harvest										
Chinook adult	0	5	2	12	46	24	0	0	89	(95)
Chinook jack	16	87	1,137	668	107	59	0	0	2,074	(276)
Coho adult	0	0	0	0	63	864	390	36	1,353	(446)
Coho jack	0	0	12	68	240	2,879	1,127	77	4,403	(1,310)
Chum	0	0	0	0	10	13	0	7	30	(33)
Steelhead	44	6	41	0	0	0	0	0	91	(51)
Rainbow	0	0	0	0	84	13	22	28	147	(168)
Cutthroat	55	0	0	92	907	630	117	9	1,810	(738)
Dolly Varden	4	27	30	31	0	47	14	7	160	(62)
Sturgeon	0	5	9	14	9	0	0	0	37	(28)
Release										
Chinook adult	0	3	5	14	0	0	0	0	22	(17)
Chinook jack	0	0	4	0	9	0	0	0	13	(17)
Coho adult	0	0	0	0	0	13	5	0	18	(15)
Coho jack	0	0	0	0	0	13	0	1	14	(14)
Pink	0	0	0	0	9	0	0	0	9	(16)
Chum	0	0	0	0	60	0	0	14	74	(109)
Steelhead	7	0	5	14	9	0	0	0	35	(22)
Cutthroat	12	9	0	4	96	138	0	3	262	(150)
Dolly Varden	6	0	0	0	0	0	0	0	6	(12)
Sturgeon	6	78	23	28	34	0	0	0	169	(88)

a. 95% confidence limits.

b. Ratio of observed (from interviews) and estimated effort.

Tables 7b-7e. Spatial and temporal catch patterns are summarized below for the species comprising the bulk of the catch. Bracketed percentages refer to percent of annual catch or, for monthly proportion released, percent of monthly catch (harvest plus release).

Chinook adults were caught from June to October, peaking in September (41%) (Fig. 8). Releases comprised 21% of the catch, and included 88% of the May to August catch. Harvest occurred in region 3 (89%) and 2 (11%); 21% of the latter occurred before the September 1 chinook opening. Releases occurred in regions 3 (73%), 2 (10%) and 1 (8%).

Chinook jacks were caught from May to October, peaking in September

Table 7d. Monthly harvest, release and angler effort in Region 3 (Sumas River to Harrison River) in the 1986 lower Fraser River sport fishery.

	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Region 3 Total Number	Region 3 Total C.L. a
Number of interviews	31	4	179	384	2,482	1,445	181	60	4,766	-
Angler effort										
Hours	3,468	349	7,336	31,666	72,619	60,100	9,697	3,644	188,879	(26,070)
Days	723	87	1,203	6,462	12,308	9,694	2,486	847	33,811	-
% interviewed a	3.7%	4.6%	14.5%	6.6%	21.3%	16.9%	9.4%	6.9%	15.9%	-
% at survey sites	13.5%	9.2%	32.3%	18.9%	52.2%	49.3%	67.6%	34.9%	44.6%	-
Harvest										
Chinook adult	0	0	0	10	382	334	0	0	726	(202)
Chinook jack	0	0	65	352	2,503	365	0	0	3,285	(802)
Coho adult	0	0	0	0	238	663	389	116	1,406	(501)
Coho jack	0	0	0	0	339	105	30	0	474	(168)
Chum	0	0	0	0	0	0	33	0	33	(71)
Steelhead	0	0	5	0	153	124	0	0	282	(115)
Cutthroat	83	0	0	0	7	6	60	71	227	(216)
Dolly Varden	0	0	0	0	4	13	0	23	40	(74)
Sturgeon	0	0	0	0	12	0	0	0	12	(20)
Release										
Chinook adult	83	0	63	10	0	7	0	0	163	(113)
Chinook jack	0	0	0	10	26	3	0	0	39	(26)
Coho adult	0	0	0	0	13	0	0	0	13	(22)
Coho jack	0	0	0	0	5	3	0	0	8	(8)
Sockeye	0	0	0	10	15	4	0	0	29	(24)
Chum	0	0	0	0	0	302	72	0	374	(257)
Steelhead	27	0	0	0	11	606	29	0	673	(342)
Cutthroat	0	0	0	0	0	0	17	23	40	(77)

a. 95% confidence limits.

b. Ratio of observed (from interviews) and estimated effort.

(40%) (Fig. 9). Only 1% were released. Harvest occurred in regions 3 (45%), 2 (28%) and 1 (25%). Most of the harvest in regions 1 and 2 occurred before September; Region 3 harvest occurred primarily after September 1. The 1986 harvest was the largest observed in the four year study (Table 19).

Coho adults were caught from September to December, peaking in October (62%) (Fig. 10). Less than 1% were released. Harvest occurred primarily in regions 1 (40%), 3 (31%) and 2 (29%).

Coho jacks were caught from July to December, peaking in October (65%) (Fig. 11). Releases comprised 6% of the catch, with the highest proportion released in October (7%). Harvest occurred primarily in regions 1 (47%) and 2 (48%); only 5% occurred

Table 7e. Monthly harvest, release and angler effort in Region 4 (Harrison River to the top of Waleach Slough) in the 1986 lower Fraser River sport fishery.

	May a	Jun a	Jul a	Aug	Sep	Oct	Nov	Dec	Region 4 Total	
									Number	C.L. b
Number of interviews	0	0	0	48	86	86	18	6	244	-
Angler effort										
Hours	578	714	2,079	7,321	7,007	7,854	1,969	909	28,431	(4,434)
Days	141	179	341	1,435	1,499	2,159	754	640	7,148	-
% interviewed c	0.0%	0.0%	0.0%	3.2%	5.3%	5.4%	1.8%	0.0%	3.8%	-
% at survey sites	0.0%	0.0%	0.0%	24.0%	43.2%	28.1%	8.8%	0.0%	25.3%	-
Harvest										
Chinook adult	0	0	0	0	1	0	0	0	1	-
Chinook jack	0	0	18	73	56	0	0	0	147	(57)
Coho adult	0	0	0	0	14	6	0	0	20	(29)
Coho jack	0	0	0	0	9	8	0	0	17	(18)
Steelhead	0	0	2	0	11	34	0	0	47	(32)
Dolly Varden	0	0	0	8	3	4	0	0	15	(17)
Release										
Chinook adult	0	0	18	2	0	0	0	0	20	(21)
Chinook jack	0	0	0	2	2	0	0	0	4	(3)
Sockeye	0	0	0	2	0	0	0	0	2	(2)
Chum	0	0	0	0	0	8	0	0	8	(16)
Steelhead	0	0	0	0	0	39	0	0	39	(22)

a. Estimated from Englebrich data only. All other estimates from Englebrich and Ferry Island data; reported interviews are from Ferry Island only.

b. 95% confidence limits.

c. Ratio of observed (from interviews) and estimated effort.

in Region 3. Almost all releases occurred in regions 1 and 2. Catch in Region 3 peaked in September, one month earlier than in regions 1 and 2.

Steelhead were caught from May to November, peaking in October (60%) (Fig. 12). Total catch (harvest plus release) was the largest observed in the four year study (Table 19). Releases comprised 57% of the catch, with the highest proportion released in October (80%) and November (100%). Most releases (94%) were in regions 3 and 4. Harvest occurred in regions 3 (49%), 1 (27%) and 2 (16%). Harvest in regions 1 and 2 occurred before August; Region 3 harvest occurred after August.

Cutthroat were caught in all months, peaking in September (43%) (Fig. 13). Releases comprised 14% of the catch, with the highest proportion released in May (26%). Harvest occurred primarily in region 2 (86%) and 3 (11%); 88% of the releases also occurred in these regions.

Table 8. Distribution of harvest among anglers, by region and month, in the 1986 lower Fraser River sport fishery. a

Region	Month	No. of inter-views	Percent of anglers harvesting: 0 fish	1 fish	2 fish	3 fish	4 fish	>4 fish	Percent of anglers harvesting at least one: Chinook adult	Chinook jack	Coho adult	Coho jack	Steel-head	Cut-throat
Regior. 1	May	126	99%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Jun	212	94%	5%	1%	0%	0%	0%	0%	2%	0%	0%	2%	0%
	Jul	416	92%	7%	1%	0%	0%	0%	0%	7%	0%	0%	0%	0%
	Aug	433	88%	9%	2%	1%	0%	0%	0%	12%	0%	0%	0%	0%
	Sep	341	89%	7%	2%	1%	0%	0%	0%	4%	3%	5%	0%	1%
	Oct	247	72%	20%	6%	1%	1%	0%	0%	4%	5%	18%	0%	0%
	Nov	106	75%	18%	2%	6%	0%	0%	0%	0%	8%	18%	0%	0%
	Dec	16	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Region 2	May	374	96%	4%	0%	0%	0%	0%	0%	1%	0%	0%	1%	2%
	Jun	604	96%	4%	0%	0%	0%	0%	0%	2%	0%	0%	0%	0%
	Jul	903	89%	9%	2%	0%	0%	0%	0%	10%	0%	0%	1%	0%
	Aug	790	91%	8%	1%	0%	0%	0%	0%	7%	0%	1%	0%	1%
	Sep	864	92%	7%	1%	0%	0%	0%	0%	1%	0%	1%	0%	5%
	Oct	1,013	86%	11%	3%	1%	0%	0%	0%	0%	3%	9%	0%	2%
	Nov	383	80%	15%	3%	1%	0%	0%	0%	0%	7%	12%	0%	3%
	Dec	86	89%	7%	3%	1%	0%	0%	0%	0%	4%	5%	0%	2%
Region 3	May	25	96%	4%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%
	Jun	3	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Jul	168	93%	7%	0%	0%	0%	0%	0%	6%	0%	0%	1%	0%
	Aug	191	96%	4%	0%	0%	0%	0%	1%	4%	0%	0%	0%	0%
	Sep	1,281	83%	12%	3%	2%	1%	0%	2%	11%	2%	2%	2%	1%
	Oct	616	83%	14%	2%	0%	0%	0%	5%	4%	6%	2%	2%	0%
	Nov	112	84%	12%	4%	1%	0%	0%	0%	0%	8%	4%	0%	5%
	Dec	48	80%	12%	8%	0%	0%	0%	0%	0%	14%	0%	0%	4%
Region 4	Aug	37	92%	8%	0%	0%	0%	0%	0%	8%	0%	0%	0%	0%
	Sep	65	92%	6%	2%	0%	0%	0%	0%	5%	2%	0%	2%	0%
	Oct	39	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Nov	11	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Dec	6	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Total	May	525	97%	3%	0%	0%	0%	0%	0%	1%	0%	0%	1%	1%
	Jun	819	95%	4%	0%	0%	0%	0%	0%	2%	0%	0%	1%	0%
	Jul	1,487	90%	8%	1%	0%	0%	0%	0%	9%	0%	0%	1%	0%
	Aug	1,451	91%	8%	1%	0%	0%	0%	0%	8%	0%	1%	0%	1%
	Sep	2,551	87%	9%	2%	1%	1%	0%	1%	7%	1%	2%	1%	2%
	Oct	1,915	83%	13%	3%	1%	0%	0%	2%	2%	4%	8%	1%	1%
	Nov	612	80%	15%	3%	2%	0%	0%	0%	0%	7%	11%	0%	3%
	Dec	156	88%	8%	4%	1%	0%	0%	0%	0%	6%	3%	0%	2%

a. Data from complete trip interviews only.

Table 9. Monthly harvest of marked fish, by species and mark type, in the 1986 lower Fraser River sport fishery.

Species	Mark type a	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total Number	Total C.L. b
Chinook adult	AFC	0	0	0	0	8	3	0	0	11	(14)
Chinook jack	AFC	0	3	27	125	63	11	0	0	229	(95)
Coho adult	AFC	0	0	0	0	37	209	70	14	330	(231)
	LPC	0	0	0	0	11	102	75	14	202	(124)
	RPC	0	0	0	0	6	178	213	27	424	(164)
	AFC/LPC	0	0	0	0	0	0	0	13	13	(45)
	AFC/RPC	0	0	0	0	0	11	65	0	76	(87)
Coho jack	AFC	0	0	0	0	23	182	161	0	366	(186)
Steelhead	AFC	19	27	10	0	6	0	0	0	62	(43)
Cutthroat	AFC	22	0	0	0	0	59	16	0	97	(43)

a. Mark types are: AFC - adipose fin clip; LPC/RPC - left or right pelvic fin clip;
b. 95% confidence limits.

Dolly Varden were caught in all months, peaking in October (60%) (Fig. 14). Only 3% were released. Harvest occurred primarily in regions 1 (79%) and 2 (16%).

Sturgeon were caught from May to September (Fig. 15), primarily in regions 1 and 2. Catch peaked in June (45%); 86% were released.

Marked Catch

The estimated harvest marked by the removal of the adipose fin or the left or right pelvic fin is reported in Table 9. The adipose fin clip incidence was 0.013 for chinook adults, 0.031 for chinook jacks, 0.091 for coho adults, 0.040 for coho jacks, 0.108 for steelhead and 0.046 for cutthroat. The pelvic fin clip incidence for coho adults was 0.047 (left) and 0.109 (right).

Angler Characteristics

The average angler trip ranged from 1.6 to 6.0 hours (Table 10). Trip length was shortest early and late in the study, and was longest in Region 3.

Anglers attempted to harvest coho (14%), trout (1%) or chinook (1%); 84% expressed no species preference and less than 1% angled for sturgeon. In Region 2, 23% angled for coho, with the proportion increasing over the study (Table 10). In regions 3 and 4, a significant proportion angled for chinook in May through August, with the proportion decreasing over the study.

Bait (73%) was the most commonly used gear, followed by lures (18%) and bait/lure combinations (10%); none used flies. Bait was the preferred gear type in regions 1 and 2 (Table 10). In regions 3 and 4, lures or bait/lure combinations were the preferred gear.

1987 FISHERY

Survey Effort

The 1987 study period, from March to December, included 209 weekdays and 97 weekend or holiday days, of which 58% and 100%, respectively, were sampled. Angler interviews totalled 16,858, (Table 11a; Appendix 9) of which 11% were from

Table 10. Angler characteristics in the 1986 lower Fraser River sport fishery.

Region	Characteristic		May-Jun	Jul-Aug	Sep-Oct	Nov-Dec	Total
Region 1	Mean angler day length (hr.)		3.8	4.3	4.4	5.0	4.3
	Target species:	- Chinook	1.7%	0.0%	0.0%	0.0%	0.3%
		- Coho	0.0%	0.0%	0.1%	0.0%	0.0%
		- Trout a	0.8%	0.0%	0.0%	0.0%	0.2%
		- Sturgeon	1.0%	0.0%	0.0%	0.0%	0.2%
		- Anything	96.5%	100.0%	99.9%	100.0%	99.2%
	Gear:	- Bait	99.7%	99.8%	99.0%	100.0%	99.6%
		- Lure	0.0%	0.1%	0.8%	0.0%	0.3%
		- Bait/Lure	0.3%	0.1%	0.3%	0.0%	0.2%
Region 2	Mean angler day length (hr.)		5.0	5.5	4.9	3.5	5.0
	Target species:	- Chinook	0.1%	0.0%	0.0%	0.0%	0.0%
		- Coho	0.0%	3.3%	51.1%	54.2%	22.6%
		- Other salmon	0.0%	0.0%	0.1%	0.0%	0.0%
		- Trout a	1.6%	0.0%	0.0%	2.9%	0.5%
		- Sturgeon	3.7%	2.5%	0.0%	0.8%	1.7%
		- Anything	94.7%	94.1%	48.8%	42.1%	75.1%
	Gear:	- Bait	97.8%	99.5%	99.6%	93.6%	98.8%
		- Lure	0.4%	0.1%	0.1%	6.4%	0.6%
		- Bait/Lure	1.8%	0.4%	0.3%	0.0%	0.6%
Region 3	Mean angler day length (hr.)		4.7	5.5	6.0	4.0	5.8
	Target species:	- Chinook	11.4%	8.5%	1.0%	0.0%	1.9%
		- Coho	0.0%	3.7%	0.0%	0.0%	0.4%
		- Trout a	0.0%	1.4%	2.6%	0.0%	2.3%
		- Sturgeon	5.7%	0.4%	0.0%	0.0%	0.1%
		- Anything	82.9%	86.0%	96.4%	100.0%	95.2%
	Gear:	- Bait	48.6%	36.9%	8.5%	10.8%	12.3%
		- Lure	45.7%	29.7%	59.2%	74.3%	56.4%
		- Bait/Lure	5.7%	33.4%	32.3%	14.9%	31.3%
Region 4	Mean angler day length (hr.)		-	5.3	4.2	1.8	4.2
	Target species:	- Chinook	-	31.3%	15.1%	0.0%	16.9%
		- Coho	-	2.1%	0.0%	0.0%	0.4%
		- Trout a	-	6.3%	2.3%	0.0%	2.9%
		- Anything	-	60.4%	82.6%	100.0%	79.8%
	Gear:	- Bait	-	14.6%	6.4%	29.2%	10.2%
		- Lure	-	52.1%	57.6%	41.7%	54.9%
		- Bait/Lure	-	33.3%	36.0%	29.2%	34.8%

a. Includes steelhead, rainbow, cutthroat or Dolly Varden.

Region 1, 59% from Region 2, 29% from Region 3 and 1% from Region 4 (Tables 11b-11e). Monthly interviews ranged from 157 in December to 3,535 in October. Five sites had 72% of the interviews: Edgewater (37%), Standard Gas (10%), Bowman's (9%), Duncan (9%) and Englebrich (8%) (Schubert 1992).

The surveyed bars accounted for 40% of the angler effort; interviews documented 12% of the angler effort (Table 11a). Survey efficiency was highest in regions 2 and 3 where over 14% of the angler effort was interviewed (Tables 11c, 11d); only 4% of the Region 1 effort (Table 11b) and 3% of the Region 4 effort (Table 11e) was interviewed during the 1987 study.

Sixty-four overflights were conducted in 1987 (Table 11a). Mean monthly rod counts ranged from 19 (December) to 588 (October) on weekdays and 51 (December) to 1,308 (October) on weekends (Appendix 10). The peak rod count (1,695) occurred on October 12. Region 2 had the highest angler count in most months.

Angler Effort

Daily Profile: Anglers fished from 5 a.m. to 10 p.m. or later (Appendix 11; Fig. 17), with a shorter angling day early and late in the study due to reduced daylight hours. Angler effort generally peaked between 11 a.m. and 2 p.m. Monthly profiles were similar between regions, except early in the study when small samples produced irregular profiles.

Total Angler Effort: Angler effort totalled 794,658 angler hours or 153,963 days (Table 11a), of which 23% occurred in Region 1, 47% in Region 2, 26% in Region 3 and 4% in Region 4 (Tables 11b-11e). Effort peaked in October (260,849 hours) (Table 11a), although Region 3 effort peaked in September (Table 11d; Fig. 7). Forty-six percent of the effort occurred on weekdays. The five largest sites had 29% of the angler effort: Edgewater (13%), Wing Dam (4%), Standard Gas (4%), Bowman's (4%) and Duncan (4%) (Schubert 1992).

Catch Per Unit Effort

Chinook adult and jack CPUE averaged 0.0028 and 0.0027, respectively. CPUE was highest in the summer, peaking in July for both adults (0.0165) and jacks (0.0070). Most catch was harvested; RPUE was only 0.0001 for both groups. CPUE was highest in July in Region 3 (0.0404) for adults (Fig. 8) and in Region 1 (0.0172) for jacks (Fig. 9). Adult CPUE in other regions was negligible; however, comparable jack CPUE was noted in other regions (Appendix 12). The average proportion of anglers harvesting at least one chinook per trip ranged from 0% in the early and late season fisheries to 12% in July, with adults comprising most of the daily creel (Table 12). The highest proportion was 24% among Region 3 anglers in July.

Coho adult and jack CPUE averaged 0.0066 and 0.0260, respectively. CPUE was highest in the fall, peaking in October for adults (0.0155) and jacks (0.0621). Almost all adult catch was harvested; jack RPUE was 0.0014. CPUE was highest in Region 1 in October for both adults (0.0286) (Fig. 10) and jacks (0.1825) (Fig. 11). Adult CPUE was comparable in regions 2 and 3; however, coho jack CPUE was considerably lower in other regions. The average proportion of anglers harvesting at least one coho per trip ranged from 0% in the early season fisheries to 18% in October, with jacks comprising most of the daily creel (Table 12). The highest proportion was 43% among Region 1 anglers in October.

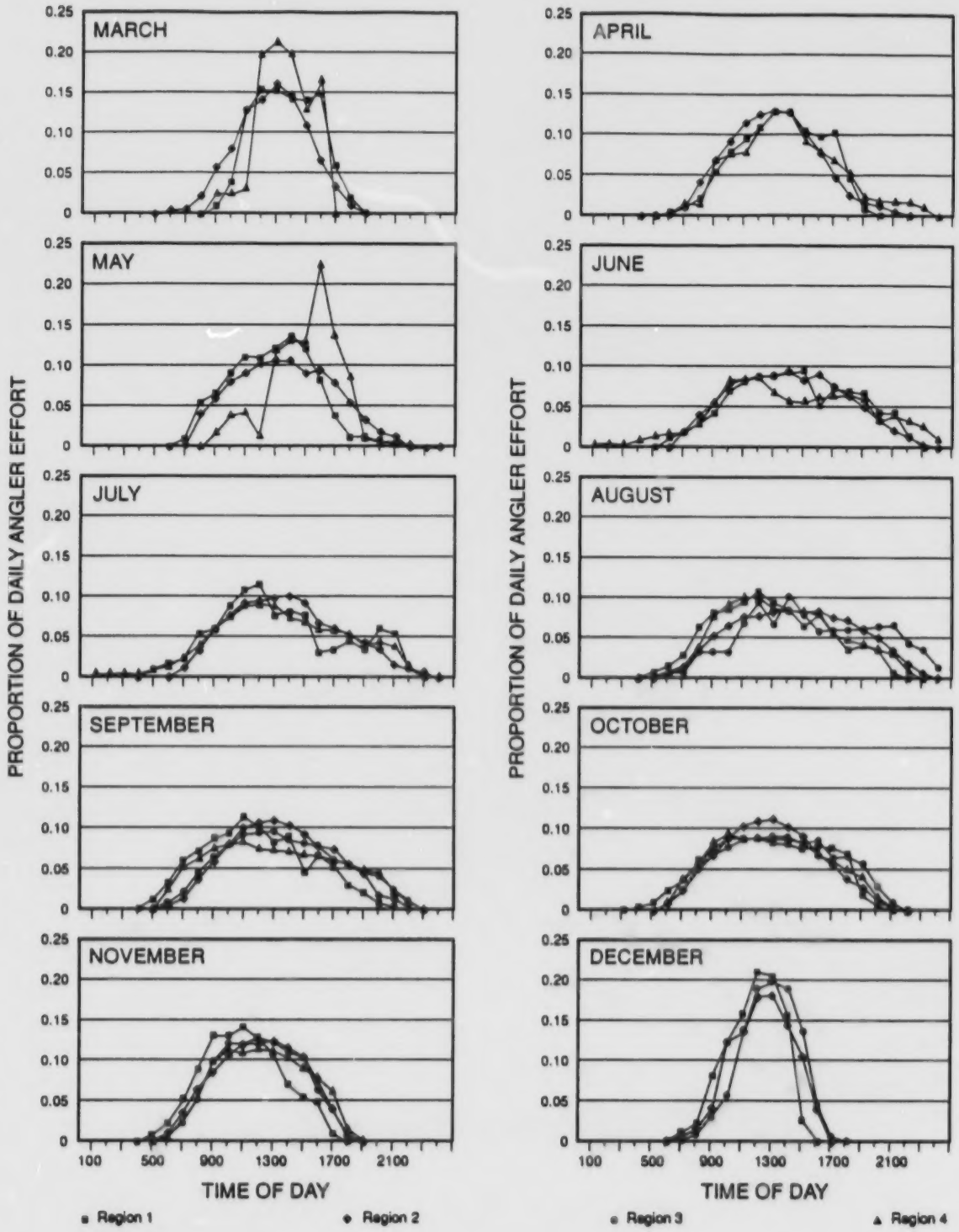

Figure 17
Hourly angler effort profiles, by month and region, in the 1987 Lower Fraser River sport fishery

Table 11a. Monthly harvest, release, angler effort and survey effort in the 1987 lower Fraser River sport fishery.

	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total Catch	Total C.L. a
Number of overflights	4	4	4	4	8	10	10	10	6	4	64	-
Number of interviews	375	736	944	1,567	1,532	2,554	3,532	3,535	1,926	157	16,858	-
Angler effort												
Hours	18,286	20,941	28,050	45,426	70,194	115,078	152,780	260,849	77,825	5,229	794,658	(54,744)
Days	4,393	4,535	5,486	8,772	13,604	23,291	27,783	48,190	16,679	1,231	153,963	-
% interviewed b	8.2%	16.6%	19.2%	20.2%	12.3%	11.3%	14.5%	7.9%	12.3%	12.7%	11.9%	-
% at survey sites	46.2%	33.5%	44.0%	50.3%	45.2%	42.7%	45.7%	32.2%	37.3%	40.1%	39.8%	-
Harvest												
Chinook adult	0	9	158	167	1,156	63	328	226	5	0	2,112	(562)
Chinook jack	0	0	48	163	408	793	470	123	10	0	2,015	(451)
Coho adult	0	0	0	0	0	82	385	4,039	745	13	5,264	(1,119)
Coho jack	0	0	0	0	0	97	495	15,179	3,754	0	19,525	(4,816)
Sockeye	0	0	0	0	15	24	0	0	0	0	39	(46)
Pink	0	0	0	0	0	0	18	0	0	0	18	(16)
Chum	0	0	0	0	0	15	0	1	21	0	37	(30)
Steelhead	12	0	10	38	19	127	138	405	54	0	803	(184)
Rainbow	70	6	0	7	0	171	40	52	10	0	356	(159)
Cutthroat	228	331	2	56	2	1,919	348	542	256	124	3,808	(1,034)
Dolly Varden	101	108	203	320	57	14	51	235	173	48	1,310	(490)
Sturgeon	0	9	2	0	31	67	0	0	5	0	114	(61)
Release												
Chinook adult	0	0	11	51	0	0	11	22	13	0	108	(52)
Chinook jack	0	0	0	3	84	0	8	14	0	0	109	(159)
Coho adult	0	0	0	0	0	0	5	3	11	0	19	(22)
Coho jack	0	0	0	0	0	23	0	1,012	115	0	1,150	(705)
Sockeye	0	0	0	0	0	3	0	0	0	0	3	(2)
Pink	0	0	0	0	0	0	451	401	0	0	852	(309)
Chum	0	0	0	0	0	0	10	303	62	0	375	(121)
Steelhead	23	65	0	16	12	35	22	39	5	0	217	(121)
Rainbow	0	7	2	42	0	31	37	0	0	0	119	(85)
Cutthroat	67	155	0	130	0	1,037	98	139	107	19	1,752	(1,260)
Dolly Varden	61	39	0	13	15	0	10	11	0	0	149	(111)
Sturgeon	0	73	12	20	141	141	0	18	37	0	442	(192)

a. 95% confidence limits.

b. Ratio of observed (from interviews) and estimated effort.

Table 11b. Monthly harvest, release and angler effort in Region 1 (Strait of Georgia to Pitt River) in the 1987 lower Fraser River sport fishery.

	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Region 1 Total Catch	Region 1 Total C.L. a
Number of interviews	28	78	56	215	109	205	376	511	267	14	1,859	-
Angler effort												
Hours	3,529	5,217	5,559	13,439	14,084	23,297	27,235	64,097	24,775	1,037	182,269	(29,286)
Days	802	1,134	1,502	3,446	4,543	5,824	7,781	14,906	5,899	230	46,069	-
% interviewed b	3.3%	6.4%	3.7%	5.6%	2.2%	3.4%	4.9%	3.5%	4.5%	6.1%	4.0%	-
% at survey sites	20.5%	15.3%	7.8%	22.0%	16.0%	18.2%	17.1%	19.2%	14.3%	17.0%	17.6%	-
Harvest												
Chinook adult	0	0	0	0	0	0	0	15	0	0	15	(22)
Chinook jack	0	0	0	60	165	191	0	0	0	0	416	(297)
Coho adult	0	0	0	0	0	35	96	1,832	402	13	2,378	(925)
Coho jack	0	0	0	0	0	14	368	10,737	2,797	0	13,916	(4,624)
Chum	0	0	0	0	0	0	0	0	15	0	15	(22)
Steelhead	0	0	0	8	0	0	0	0	0	0	8	(14)
Rainbow	50	0	0	0	0	0	0	0	0	0	50	(74)
Cutthroat	30	31	0	0	0	697	219	141	13	48	1,179	(507)
Dolly Varden	80	72	178	301	38	14	51	212	166	38	1,150	(486)
Release												
Chinook adult	0	0	0	0	0	0	0	0	13	0	13	(25)
Chinook jack	0	0	0	0	77	0	0	0	0	0	77	(159)
Coho jack	0	0	0	0	0	23	0	963	91	0	1,077	(702)
Pink	0	0	0	0	0	0	24	0	0	0	24	(45)
Steelhead	0	0	0	16	12	35	0	0	0	0	63	(78)
Cutthroat	0	9	0	0	0	225	78	15	0	0	327	(220)
Dolly Varden	61	22	0	13	12	0	0	11	0	0	119	(109)
Sturgeon	0	0	0	11	51	35	0	0	0	0	97	(135)

a. 95% confidence limits.

b. Ratio of observed (from interviews) and estimated effort.

Steelhead CPUE averaged 0.0013 and was highest in the fall, peaking in October (0.0017). Most catch was harvested, except in March (0.0013) and April (0.0031). CPUE was highest in regions 3 (0.0058) and 4 (0.0067) in October (Fig. 12; Appendix 12). The average proportion of anglers harvesting at least one steelhead per trip was 2% or less in any month (Table 12). The highest proportion was 8% among Region 3 anglers in October.

Cutthroat CPUE averaged 0.0070 and was variable through the year. Most catch was harvested, although RPUE was high in August (0.0090). CPUE was highest in Region 3 in August (0.0657) and December (0.0734) (Fig. 13; Appendix 12). CPUE in Region 4 was minimal. The average proportion of anglers harvesting at least one cutthroat per trip ranged from 0% (May/July) to 8% (April) (Table 12). The highest proportion was 14% among Region 1 anglers in

Table 11c. Monthly harvest, release and angler effort in Region 2 (Pitt River to Sumas River) in the 1987 lower Fraser River sport fishery.

	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Region 2 Total Catch	Region 2 Total C.L. a
Number of interviews	331	578	822	1,203	905	1,597	1,436	1,681	1,268	104	9,925	-
Angler effort												
Hours	12,181	12,948	20,134	27,490	26,509	61,387	54,410	123,930	33,637	2,784	375,410	(37,665)
Days	2,833	2,755	3,247	4,229	4,208	11,582	9,546	21,005	7,008	605	67,018	-
% interviewed b	11.0%	21.2%	24.4%	27.5%	19.2%	13.0%	14.0%	7.6%	18.5%	16.6%	14.2%	-
% at survey sites	60.5%	43.0%	53.6%	59.7%	65.2%	55.0%	42.2%	34.1%	56.2%	50.3%	47.1%	-
Harvest												
Chinook adult	0	0	158	101	28	8	5	0	0	0	300	(154)
Chinook jack	0	0	44	95	131	185	53	22	10	0	540	(137)
Coho adult	0	0	0	0	0	3	97	1,404	170	0	1,674	(483)
Coho jack	0	0	0	0	0	61	93	4,240	932	0	5,326	(1,348)
Sockeye	0	0	0	0	0	24	0	0	0	0	24	(37)
Pink	0	0	0	0	0	0	6	0	0	0	6	(8)
Chum	0	0	0	0	0	15	0	0	6	0	21	(24)
Steelhead	12	0	10	19	19	127	37	11	0	0	235	(95)
Rainbow	20	4	0	7	0	171	40	52	10	0	304	(141)
Cutthroat	198	237	2	0	2	376	103	369	204	57	1,548	(394)
Dolly Varden	21	30	25	19	19	0	0	16	7	0	137	(60)
Sturgeon	0	9	2	0	31	67	0	0	5	0	114	(60)
Release												
Chinook adult	0	0	11	32	0	0	0	0	0	0	43	(24)
Chinook jack	0	0	0	3	7	0	0	0	0	0	10	(9)
Coho adult	0	0	0	0	0	0	0	0	11	0	11	(20)
Coho jack	0	0	0	0	0	0	0	16	24	0	40	(39)
Steelhead	23	65	0	0	0	0	0	0	0	0	88	(89)
Rainbow	0	7	0	0	0	31	32	0	0	0	70	(59)
Cutthroat	67	146	0	0	0	0	0	124	107	0	444	(178)
Dolly Varden	0	17	0	0	3	0	10	0	0	0	30	(26)
Sturgeon	0	73	9	9	90	106	0	18	37	0	342	(129)

a. 95% confidence limits.

b. Ratio of observed (from interviews) and estimated effort.

December and Region 3 anglers in April.

Dolly Varden CPUE averaged 0.0018; virtually all catch was harvested. CPUE was highest in Region 1 in March (0.0400) and December (0.0366) (Fig. 14); CPUE was negligable in other regions (Appendix 12).

Sturgeon CPUE averaged only 0.0007; most catch was released. CPUE peaked in region 2 in April (0.0063) (Fig. 15; Appendix 12). CPUE was negligable in regions 3 and 4.

Total Catch

Study area monthly harvest and release by species is reported Table 11a; regional data are reported in Tables 11b-11e. Spatial and temporal catch patterns are summarized below for the species comprising the bulk

Table 11d. Monthly harvest, release and angler effort in Region 3 (Sumas River to Harrison River) in the 1987 lower Fraser River sport fishery.

	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Region 3 Total Catch	Region 3 Total C.L. a
Number of interviews	16	80	66	149	518	726	1,690	1,267	361	23	4,896	-
Angler effort												
Hours	2,271	2,137	1,235	4,139	27,928	25,253	64,616	61,819	14,611	518	204,527	(26,066)
Days	668	497	386	1,010	4,578	4,856	8,974	9,659	2,706	148	33,482	-
% interviewed b	2.4%	19.0%	22.6%	21.1%	11.5%	16.4%	20.3%	13.9%	14.3%	15.9%	16.1%	-
% at survey sites	16.0%	30.7%	89.7%	84.8%	43.7%	39.5%	63.5%	42.1%	40.3%	60.4%	49.4%	-
Harvest												
Chinook adult	0	9	0	66	1,128	55	311	210	5	0	1,784	(540)
Chinook jack	0	0	4	8	112	417	407	101	0	0	1,049	(312)
Coho adult	0	0	0	0	0	22	179	800	167	0	1,168	(401)
Coho jack	0	0	0	0	0	22	30	202	25	0	279	(96)
Sockeye	0	0	0	0	15	0	0	0	0	0	15	(27)
Pink	0	0	0	0	0	0	9	0	0	0	9	(12)
Steelhead	0	0	0	11	0	0	84	323	33	0	451	(149)
Rainbow	0	2	0	0	0	0	0	0	0	0	2	(6)
Cutthroat	0	63	0	56	0	846	24	32	25	19	1,065	(810)
Dolly Varden	0	6	0	0	0	0	0	7	0	10	23	(12)
Release												
Chinook adult	0	0	0	19	0	0	9	22	0	0	50	(38)
Chinook jack	0	0	0	0	0	0	8	14	0	0	22	(13)
Coho adult	0	0	0	0	0	0	5	3	0	0	8	(11)
Coho jack	0	0	0	0	0	0	0	33	0	0	33	(49)
Sockeye	0	0	0	0	0	3	0	0	0	0	3	(2)
Pink	0	0	0	0	0	0	380	337	0	0	717	(303)
Chum	0	0	0	0	0	0	10	303	59	0	372	(121)
Steelhead	0	0	0	0	0	0	19	36	0	0	55	(26)
Rainbow	0	0	2	42	0	0	5	0	0	0	49	(62)
Cutthroat	0	0	0	130	0	812	20	0	0	19	981	(1,228)
Sturgeon	0	0	3	0	0	0	0	0	0	0	3	(2)

a. 95% confidence limits.

b. Ratio of observed (from interviews) and estimated effort.

of the catch. Bracketed percentages refer to percent of annual catch or, for monthly proportion released, percent of monthly catch (harvest plus release).

Chinook adults were caught from April to November, peaking in July (52%) (Fig. 8). Releases comprised 5% of the catch, including 16% of the April to June catch. Harvest occurred in region 3 (84%) and 2 (14). Most of the Region 2 harvest occurred in May and June; 63% of the Region 3 harvest occurred in July.

Chinook jacks were caught from May to November, peaking in August

Table 11e. Monthly harvest, release and angler effort in Region 4 (Harrison River to the top of Waleach Slough) in the 1987 lower Fraser River sport fishery.

	Mar a	Apr a	May a	Jun a	Jul a	Aug	Sep	Oct	Nov	Dec	Region 4 Total Catch	Region 4 Total C.L. b
Number of interviews	0	0	0	0	0	26	30	76	30	16	178	-
Angler effort												
Hours	305	639	1,122	358	1,673	5,141	6,519	11,003	4,802	890	32,452	(6,419)
Days	90	149	351	87	274	1,028	1,482	2,620	1,067	247	7,394	-
% interviewed c	0.0%	0.0%	0.0%	0.0%	0.0%	2.4%	1.9%	4.3%	2.9%	6.3%	2.8%	-
% at survey sites	0.0%	0.0%	0.0%	0.0%	0.0%	22.8%	18.3%	32.2%	13.7%	23.5%	20.9%	-
Harvest												
Chinook adult	-	-	-	-	-	0	12	1	0	0	13	(10)
Chinook jack	-	-	-	-	-	0	10	0	0	0	10	(12)
Coho adult	-	-	-	-	-	22	13	3	6	0	44	(75)
Coho jack	-	-	-	-	-	0	4	0	0	0	4	(6)
Pink	-	-	-	-	-	0	3	0	0	0	3	(4)
Chum	-	-	-	-	-	0	0	1	0	0	1	(2)
Steelhead	-	-	-	-	-	0	17	71	21	0	109	(48)
Cutthroat	-	-	-	-	-	0	2	0	14	0	16	(18)
Release												
Chinook adult	-	-	-	-	-	0	2	0	0	0	2	(4)
Pink	-	-	-	-	-	0	47	64	0	0	111	(48)
Chum	-	-	-	-	-	0	0	0	3	0	3	(3)
Steelhead	-	-	-	-	-	0	3	3	5	0	11	(4)

a. Effort estimated from Region 4 rod counts and Region 3 effort profiles. Catch could not be estimated because Ferry Island and Englebrich bars were not surveyed.

b. 95% confidence limits.

c. Ratio of observed (from interviews) and estimated effort.

(37%) (Fig. 9). Only 5% were released. Harvest occurred in regions 3 (52%), 2 (27%) and 1 (21%). Most of the harvest in regions 1 and 2 occurred in June to August; Region 3 harvest occurred primarily in August and September.

Coho adults were caught from August to December, peaking in October (77%) (Fig. 10). Less than 1% were released. Harvest occurred primarily in regions 1 (45%), 2 (32%) and 3 (22%).

Coho jacks were caught from August to November, peaking in October (78%) (Fig. 11). Releases comprised 6% of the catch, with the highest proportion released in August (19%). Ninety-four percent of the releases occurred in Region 1. Harvest occurred primarily in regions 1 (71%) and 2 (27%). The 1987 harvest was the largest observed in the four year study (Table 19).

Steelhead were caught from March to November, peaking in October (44%) (Fig. 12). Releases comprised 21% of the catch, with the highest proportion released in April (100%). Releases occurred throughout the study area. Harvest occurred primarily in regions 3 (56%), 2 (29%) and 4 (14%). Region 2 harvest occurred

Table 12. Distribution of harvest among anglers, by region and month, in the 1987 lower Fraser River sport fishery. a

Region	Month	No. of interviews	Percent of anglers harvesting: 0 fish	1 fish	2 fish	3 fish	4 fish	>4 fish	Percent of anglers harvesting at least one: Chinook adult	Chinook jack	Coho adult	Coho jack	Steelhead	Cutthroat
Region 1	Mar	20	80%	20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%
	Apr	57	91%	7%	2%	0%	0%	0%	0%	0%	0%	0%	0%	4%
	May	38	95%	3%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Jun	110	88%	12%	0%	0%	0%	0%	0%	3%	0%	0%	1%	0%
	Jul	64	95%	5%	0%	0%	0%	0%	0%	3%	0%	0%	0%	0%
	Aug	186	89%	7%	2%	1%	0%	1%	0%	4%	1%	1%	0%	7%
	Sep	353	93%	5%	2%	1%	0%	0%	0%	0%	2%	4%	0%	3%
	Oct	361	61%	20%	10%	2%	3%	3%	0%	0%	9%	34%	0%	1%
	Nov	253	67%	19%	6%	4%	1%	4%	0%	0%	7%	28%	0%	0%
	Dec	14	71%	21%	7%	0%	0%	0%	0%	0%	7%	0%	0%	14%
Region 2	Mar	236	92%	5%	3%	0%	0%	0%	0%	0%	0%	0%	0%	6%
	Apr	414	90%	9%	1%	0%	0%	0%	0%	0%	0%	0%	0%	8%
	May	519	94%	6%	0%	0%	0%	0%	3%	1%	0%	0%	1%	0%
	Jun	691	94%	6%	0%	0%	0%	0%	2%	3%	0%	0%	1%	0%
	Jul	473	94%	5%	1%	0%	0%	0%	1%	3%	0%	0%	0%	0%
	Aug	945	92%	7%	1%	0%	0%	0%	0%	2%	0%	0%	1%	2%
	Sep	989	97%	3%	0%	0%	0%	0%	0%	0%	0%	1%	0%	1%
	Oct	939	84%	12%	3%	1%	0%	0%	0%	0%	4%	11%	0%	2%
	Nov	862	86%	11%	2%	0%	0%	0%	0%	0%	2%	10%	0%	2%
	Dec	90	92%	8%	0%	0%	0%	0%	0%	0%	0%	0%	0%	6%
Region 3	Mar	15	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Apr	45	82%	18%	0%	0%	0%	0%	2%	0%	0%	0%	0%	14%
	May	52	96%	4%	0%	0%	0%	0%	0%	4%	0%	0%	0%	0%
	Jun	91	80%	12%	2%	3%	2%	0%	10%	2%	0%	0%	0%	8%
	Jul	435	77%	21%	2%	0%	0%	0%	21%	3%	0%	0%	0%	0%
	Aug	517	90%	7%	2%	0%	0%	0%	2%	6%	0%	1%	0%	2%
	Sep	710	86%	12%	2%	0%	0%	0%	4%	4%	4%	1%	2%	0%
	Oct	520	85%	13%	1%	1%	0%	0%	2%	0%	5%	1%	8%	0%
	Nov	225	92%	8%	0%	0%	0%	0%	0%	0%	3%	0%	3%	2%
	Dec	22	91%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%	5%
Region 4	Aug	12	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Sep	20	95%	5%	0%	0%	0%	0%	0%	0%	5%	0%	0%	0%
	Oct	37	97%	3%	0%	0%	0%	0%	0%	0%	0%	0%	3%	0%
	Nov	21	95%	5%	0%	0%	0%	0%	0%	0%	0%	0%	5%	0%
	Dec	14	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

a. Data from complete trip interviews only.

Continued

Table 12 continued. Distribution of harvest among anglers, by month and region, in the 1987 lower Fraser River sport fishery. a

Region	Month	No. of interviews	Percent of anglers harvesting: 0 fish	1 fish	2 fish	3 fish	4 fish	>4 fish	Percent of anglers harvesting at least one: Chinook adult	Chinook jack	Coho adult	Coho jack	Steelhead	Cutthroat
Total	Mar	271	92%	6%	2%	0%	0%	0%	0%	0%	0%	0%	0%	6%
	Apr	516	90%	9%	1%	0%	0%	0%	0%	0%	0%	0%	0%	8%
	May	609	94%	5%	0%	0%	0%	0%	3%	1%	0%	0%	0%	0%
	Jun	892	91%	7%	1%	1%	0%	0%	3%	3%	0%	0%	1%	1%
	Jul	972	87%	12%	1%	0%	0%	0%	9%	3%	0%	0%	0%	0%
	Aug	1,660	91%	7%	1%	0%	0%	0%	1%	3%	0%	1%	1%	3%
	Sep	2,072	92%	6%	1%	0%	0%	0%	1%	2%	2%	1%	1%	1%
	Oct	1,857	80%	13%	4%	1%	1%	1%	1%	0%	5%	13%	2%	1%
	Nov	1,361	83%	12%	3%	1%	0%	1%	0%	0%	3%	11%	0%	2%
	Dec	140	91%	8%	1%	0%	0%	0%	0%	0%	1%	0%	0%	7%

a. Data from complete trip interviews only.

Table 13. Monthly harvest of marked fish, by species and mark type, in the 1987 lower Fraser River sport fishery.

Species	Mark type a	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total Catch	Total C.L. b
Chinook adult	AFC	0	0	0	11	51	0	5	0	0	0	67	(45)
Chinook jack	AFC	0	0	0	0	0	56	23	4	0	0	83	(54)
Coho adult	AFC	0	0	0	0	0	33	34	85	16	0	168	(122)
Coho jack	AFC	0	0	0	0	0	18	48	513	79	0	658	(275)
Chum	AFC	0	0	0	0	0	15	0	0	0	0	15	(29)
Steelhead	AFC	6	0	0	11	0	46	0	0	0	0	63	(94)
	AFC/LMC	0	0	0	0	0	33	0	0	0	0	33	(31)
	AFC/RMC	0	0	0	0	0	39	37	0	0	0	76	(53)
Cutthroat	AFC	0	55	0	40	0	183	52	45	8	0	383	(182)
	LMC	0	4	0	0	0	43	5	0	0	0	52	(54)
	RMC	0	21	0	0	0	262	45	85	0	0	413	(276)
	AFC/LMC	0	0	0	0	0	59	0	0	0	0	59	(43)
	AFC/RMC	0	0	0	0	0	56	81	41	0	0	178	(127)
	LMC/RMC	0	0	0	0	0	14	0	0	0	0	14	(24)

a. Mark types are: AFC - adipose fin clip; LMC/RMC - left or right maxillary clip.
b. 95% confidence limits.

through October; harvest in regions 3 and 4 occurred primarily after August.

Cutthroat were caught in all months, peaking in August (53%) (Fig. 13). The 1987 total catch (harvest plus release) was the largest observed in the four year study (Table 19). Releases comprised 32% of the catch, with the highest proportion released in June (70%). Harvest occurred primarily in region 2 (41%), 1 (31%) and 3 (28%). Releases occurred in regions 3 (56%), 2 (25%) and 1 (19%).

Dolly Varden were caught in all months, peaking in June (23%) and October (17%) (Fig. 14). Releases comprised 10% of the catch, with the highest proportion in March (38%). Harvest occurred primarily in regions 1 (88%) and 2 (10%).

Sturgeon were caught from April to November (Fig. 15), primarily in Region 2. Catch peaked in July (31%) and August (37%); 80% were released.

Marked Catch

The estimated harvest marked by the removal of the adipose fin or the left or right maxillary bone is reported in Table 13. The adipose fin clip incidence was 0.032 for chinook adults, 0.041 for chinook jacks, 0.032 for coho adults, 0.034 for coho jacks, 0.405 for chum, 0.214 for steelhead and 0.163 for cutthroat. The maxillary clip incidence was 0.041 (left) and 0.095 (right) for steelhead and 0.029 (left) and 0.155 (right) for cutthroat. A further 0.004 of the cutthroat had both maxillary bones clipped.

Angler Characteristics

The average angler trip ranged from 3.8 to 6.8 hours (Table 14). Trip length was longest in Region 3.

Anglers attempted to harvest coho (7%), chinook (5%), trout (4%) or sturgeon (1%); 83% expressed no species preference. In Region 1, 45% angled for coho, with the proportion increasing over the study (Table 14).

Bait (70%) was the most commonly used gear, followed by lures (22%) and bait/lure combinations (8%); less than 1% used flies. Bait was the preferred gear type in regions 1 and 2 (Table 14). In regions 3 and 4, lures or bait/lure combinations were the preferred gear.

1988 FISHERY

Survey Effort

The 1988 study period, from April to December, included 188 weekdays and 87 weekend or holiday days, of which 58% and 100%, respectively, were sampled. Angler interviews totalled 16,427, (Table 15a; Appendix 13) of which 7% were from Region 1, 79% from Region 2 and 14% from Region 3 (Tables 15b-15d). No anglers were interviewed in Region 4. Monthly interviews ranged from 201 in April to 3,749 in October. Five sites had 80% of the interviews: Edgewater (48%), Standard Gas (12%), Duncan (10%), Brownsville (5%) and Two Bit (4%) (Schubert 1992).

The surveyed bars accounted for 43% of the angler effort; interviews documented 13% of the angler effort (Table 15a). Survey efficiency was highest in regions 2 (20%) (Table 15c) and 3 (9%) (Table 15d); only 5% of the Region 1 anglers were interviewed during 1988 (Table 15b).

Fifty-six overflights were conducted in 1988 (Table 15a). Mean monthly rod counts ranged from 30 (December) to 521 (October) on weekdays and 55 (December) to 1,361 (October) on weekends (Appendix 14).

Table 14. Angler characteristics in the 1987 lower Fraser River sport fishery.

Location	Characteristic		Mar-Apr	May-Jun	Jul-Aug	Sep-Oct	Nov-Dec	Total
Region 1	Mean angler day length (hr.)		4.5	3.9	3.8	3.9	4.2	4.0
	Target species:	- Chinook	9.4%	17.0%	22.4%	0.1%	0.0%	6.8%
		- Coho	0.0%	0.0%	8.6%	68.3%	67.6%	44.5%
		- Other salmon	0.0%	0.0%	0.3%	0.0%	0.0%	0.1%
		- Trout a	32.1%	10.3%	1.0%	0.2%	1.4%	3.8%
		- Sturgeon	0.0%	0.0%	7.6%	0.2%	0.0%	1.4%
		- Anything	58.5%	72.7%	60.2%	31.1%	31.0%	43.5%
	Gear:	- Bait	99.1%	100.0%	99.6%	99.8%	100.0%	99.8%
		- Lure	0.9%	0.0%	0.0%	0.0%	0.0%	0.1%
		- Bait/Lure	0.0%	0.0%	0.4%	0.2%	0.0%	0.2%
Region 2	Mean angler day length (hr.)		4.6	6.4	5.7	5.8	4.8	5.6
	Target species:	- Chinook	0.0%	15.8%	8.0%	0.0%	0.0%	5.3%
		- Coho	0.0%	0.0%	0.1%	2.1%	10.6%	2.1%
		- Trout a	7.2%	0.0%	1.0%	0.3%	11.7%	2.6%
		- Sturgeon	1.3%	0.4%	3.7%	0.3%	0.4%	1.3%
		- Anything	91.5%	83.7%	87.1%	97.4%	77.3%	88.7%
	Gear:	- Bait	99.3%	99.8%	95.9%	99.9%	99.8%	98.8%
		- Lure	0.0%	0.1%	0.4%	0.1%	0.0%	0.1%
		- Bait/Lure	0.7%	0.2%	3.7%	0.0%	0.2%	1.1%
Region 3	Mean angler day length (hr.)		4.1	3.8	5.6	6.8	5.3	6.0
	Target species:	- Chinook	0.0%	0.0%	2.5%	3.3%	0.7%	2.7%
		- Coho	0.0%	0.0%	1.8%	1.8%	0.0%	1.6%
		- Other salmon	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%
		- Trout a	4.2%	0.0%	0.2%	6.8%	41.6%	6.9%
		- Sturgeon	0.0%	0.0%	0.0%	0.0%	0.4%	0.0%
		- Anything	95.8%	100.0%	95.6%	87.9%	57.3%	88.7%
	Gear:	- Bait	13.5%	10.2%	2.7%	0.9%	6.1%	2.4%
		- Lure	39.6%	58.1%	75.5%	72.1%	77.8%	72.1%
		- Bait/Lure	44.8%	30.7%	21.9%	27.0%	16.1%	25.4%
		- Fly	2.1%	0.9%	0.0%	0.0%	0.0%	0.1%
Region 4	Mean angler day length (hr.)		-	-	5.0	4.3	4.1	4.3
	Target species:	- Chinook	-	-	50.0%	0.9%	0.0%	7.9%
		- Coho	-	-	30.8%	4.7%	0.0%	7.3%
		- Trout a	-	-	0.0%	11.3%	54.4%	20.8%
		- Anything	-	-	19.2%	83.0%	45.7%	64.0%
	Gear:	- Bait	-	-	7.7%	0.0%	43.8%	6.1%
		- Lure	-	-	38.5%	75.5%	31.3%	64.2%
		- Bait/Lure	-	-	53.9%	24.5%	25.0%	29.7%

a. Includes steelhead, rainbow, cutthroat or Dolly Varden.

The peak rod count (1,685) occurred on October 10. Region 2 had the highest angler count in most months.

Angler Effort

Daily Profile: Anglers fished from 5 a.m. to 10 p.m. or later (Appendix 15; Fig. 18), with a shorter angling day early and late in the study due to reduced daylight hours. Angler effort peaked between 11 a.m. and 2 p.m. Monthly profiles were similar between regions, except early in the study when small samples produced irregular profiles.

Total Angler Effort: Angler effort totalled 722,590 angler hours or 126,014 days (Table 15a), of which 20% occurred in Region 1, 47% in Region 2, 27% in Region 3 and 5% in Region 4 (Tables 15b-15d). Effort peaked in October (245,170 hours) (Table 15a; Fig. 7). Forty-seven percent of the effort occurred on weekdays. The five largest sites had 32% of the angler effort: Edgewater (15%), Duncan (5%), Wing Dam (4%), Englebrich (4%) and Standard Gas (4%) (Schubert 1992).

Catch Per Unit Effort

Chinook adult and jack CPUE averaged 0.0033 and 0.0062, respectively. CPUE was highest in the summer, peaking in July for adults (0.0109) and jacks (0.0110). Most catch was harvested; RPUE was only 0.0003 for adults and 0.0009 for jacks. CPUE was highest in Region 3 in June (0.0768) for adults (Fig. 8) and in Region 1 in July (0.0630) for jacks (Fig. 9). Comparable adult and jack CPUE was noted in other areas (Appendix 16). The average proportion of anglers harvesting at least one chinook per trip ranged from 0% in the early and late season fisheries to 9% in July, with jacks comprising most of the daily creel (Table 16). The highest proportion was 31% among Region 3 anglers in July.

Coho adult and jack CPUE averaged 0.0128 and 0.0079, respectively. CPUE was highest in the fall, peaking in October for adults (0.0261) and in November for jacks (0.0143). Almost all catch was harvested. CPUE was highest in Region 1 in October for adults (0.0506) (Fig. 10) and in September for jacks (0.0585) (Fig. 11). Adult CPUE was comparable in regions 2 and 3; coho jack CPUE was comparable only in Region 2. The average proportion of anglers harvesting at least one coho per trip ranged from 0% in the early and late season fisheries to 29% in November, with adults comprising most of the daily creel (Table 16). The highest proportion was 57% among Region 1 anglers in November.

Steelhead CPUE averaged 0.0008 and peaked June (0.0012) and October (0.0014). RPUE was only 0.0002. CPUE was highest in Region 3 in October (0.0043) (Fig. 12; Appendix 16). The average proportion of anglers harvesting at least one steelhead per trip was 1% or less in any month (Table 16). The highest proportion was 6% among Region 3 anglers in October.

Cutthroat CPUE averaged 0.0023 and peaked in November (0.0081). Almost all catch was harvested. CPUE was highest in Region 1 in November (0.0195) (Fig. 13; Appendix 16). CPUE in regions 3 and 4 was minimal. The average proportion of anglers harvesting at least one cutthroat per trip was 1% or less in any month (Table 16). The highest proportion was 6% among Region 1 anglers in August.

Dolly Varden CPUE averaged 0.0018. All catch was harvested. CPUE was highest in Region 1 in June (0.0275) and August (0.0210) (Fig.

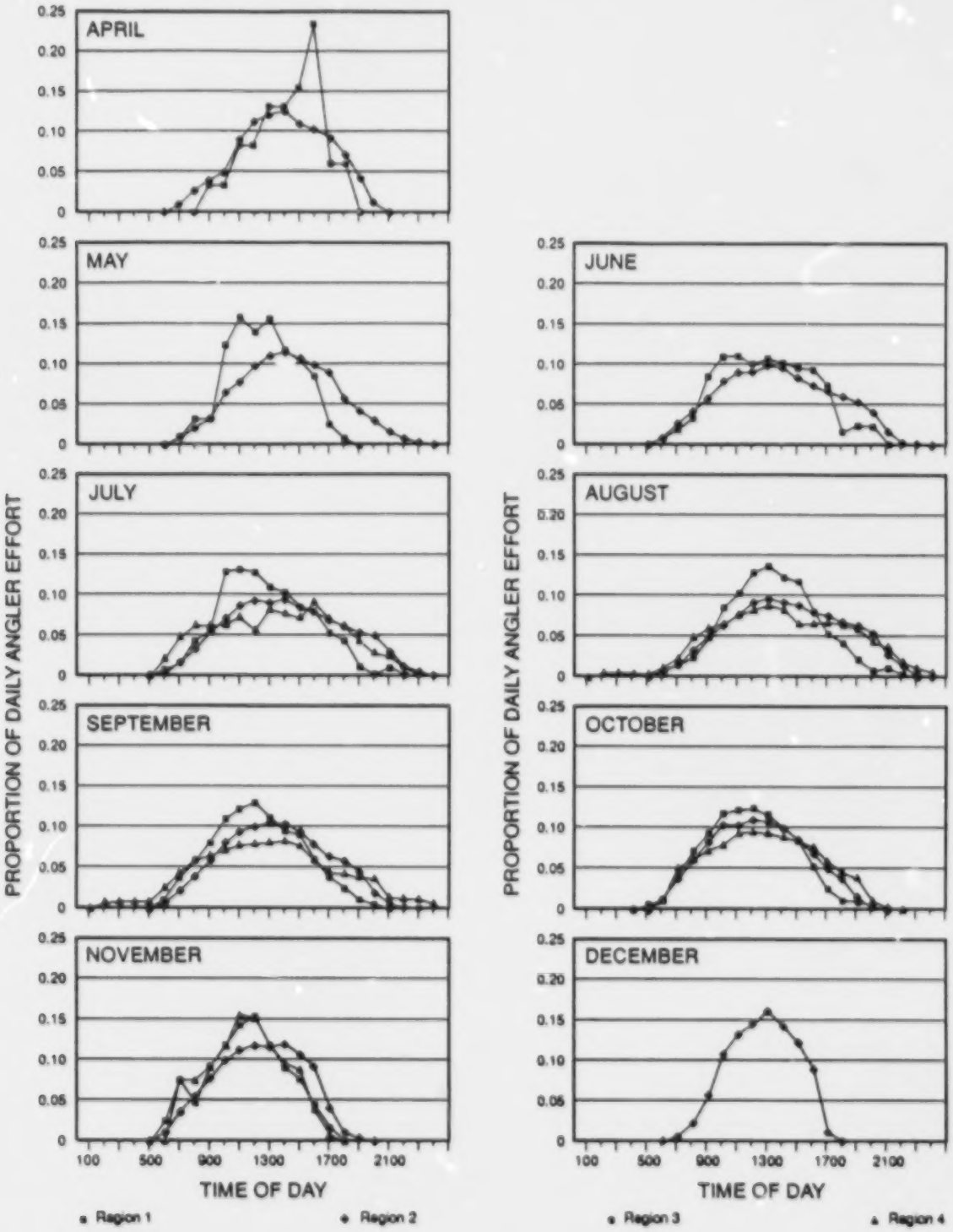

Figure 18
Hourly angler effort profiles, by month and region, in the 1988 Lower Fraser River sport fishery

Table 15a. Monthly harvest, release, angler effort and survey effort in the 1988 lower Fraser River sport fishery.

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total Number	Total C.L.
Number of overflights	2	4	6	8	10	10	8	6	2	56	-
Number of interviews	201	846	1,403	2,722	2,114	3,027	3,749	2,145	220	16,427	-
Angler effort											
Hours	15,245	19,035	32,144	102,057	96,124	132,364	245,170	76,148	4,303	722,590	(56,871)
Days	4,163	4,326	6,442	15,359	16,236	21,295	40,951	16,057	1,187	126,014	-
% interviewed b	5.3%	18.8%	22.0%	16.7%	12.4%	14.2%	8.9%	13.9%	18.3%	12.8%	-
% at survey sites	28.7%	35.4%	53.0%	43.3%	45.4%	51.1%	37.6%	40.3%	54.0%	42.7%	-
Harvest											
Chinook adult	0	11	22	1,035	682	286	163	0	0	2,199	(1,031)
Chinook jack	0	15	191	881	951	1,278	510	0	0	3,826	(753)
Coho adult	0	0	0	0	186	857	6,391	1,828	0	9,262	(1,727)
Coho jack	0	0	0	26	167	1,489	2,874	1,084	0	5,640	(992)
Sockeye	0	0	0	109	21	74	0	0	0	204	(183)
Chum	0	0	0	0	0	0	122	162	0	284	(190)
Steelhead	0	10	39	14	26	87	229	4	0	409	(130)
Rainbow	14	17	6	20	37	82	36	56	8	276	(106)
Cutthroat	12	8	36	25	147	166	529	613	0	1,536	(499)
Dolly Varden	0	28	258	63	260	172	344	197	0	1,322	(387)
Sturgeon	0	3	0	5	11	0	4	0	0	23	(22)
Release											
Chinook adult	0	3	93	73	17	25	0	0	0	211	(165)
Chinook jack	0	0	0	244	168	174	96	0	0	682	(315)
Coho adult	0	0	0	0	0	7	4	4	0	15	(16)
Coho jack	0	0	0	0	0	0	32	8	0	40	(34)
Sockeye	0	0	0	7	43	0	0	0	0	50	(46)
Chum	0	0	0	0	0	5	37	38	0	80	(62)
Steelhead	0	4	0	0	0	28	112	0	0	144	(125)
Rainbow	0	11	0	13	0	58	10	4	2	98	(76)
Cutthroat	0	3	0	0	6	79	10	3	0	101	(101)
Dolly Varden	0	0	0	0	0	0	0	0	6	6	(18)
Sturgeon	0	44	28	9	32	71	23	7	0	214	(78)

a. 95% confidence limits.

b. Ratio of observed (from interviews) and estimated effort.

14); CPUE was negligable in other regions (Appendix 16).

Sturgeon CPUE averaged only 0.0003; most catch was released. CPUE peaked in Region 2 in May (0.0034) (Fig. 15; Appendix 16). CPUE was negligable other regions.

Total Catch

Study area monthly harvest and release by species is reported Table 15a; regional data are reported in Tables 15b-15d. Spatial and temporal catch patterns are summarized below for the species comprising the bulk

Table 15b. Monthly harvest, release and angler effort in Region 1 (Strait of Georgia to Pitt River) in the 1988 lower Fraser River sport fishery.

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Region 1 Total Number	Region 1 Total C.L. a
Number of interviews	9	59	92	117	124	278	369	132	1	1,181	-
Angler effort											
Hours	3,280	4,722	8,633	11,817	12,385	19,370	54,453	30,621	390	145,671	(20,412)
Days	1,171	1,073	1,693	2,273	1,998	3,459	8,927	6,124	65	26,782	-
% interviewed b	0.8%	5.3%	5.3%	5.2%	6.0%	7.9%	4.2%	2.2%	1.5%	4.5%	-
% at survey sites	5.0%	10.8%	27.5%	15.9%	26.6%	29.2%	16.6%	8.7%	15.4%	17.6%	-
Harvest											
Chinook adult	0	0	0	28	17	0	14	0	0	59	(185)
Chinook jack	0	0	42	501	567	68	0	0	0	1,178	(350)
Coho adult	0	0	0	0	0	27	2,753	233	0	3,013	(900)
Coho jack	0	0	0	0	164	1,133	164	0	0	1,461	(455)
Sockeye	0	0	0	109	21	74	0	0	0	204	(183)
Chum	0	0	0	0	0	0	81	158	0	239	(186)
Steelhead	0	0	15	0	0	9	38	0	0	62	(54)
Rainbow	0	17	0	0	0	29	0	32	0	78	(53)
Cutthroat	0	0	20	16	118	0	0	598	0	752	(376)
Dolly Varden	0	17	237	52	260	143	331	197	0	1,237	(383)
Release											
Chinook adult	0	0	0	0	17	18	0	0	0	35	(137)
Chinook jack	0	0	0	244	133	9	0	0	0	386	(207)
Sockeye	0	0	0	0	15	0	0	0	0	15	(25)
Rainbow	0	0	0	0	0	22	0	0	0	22	(39)

a. 95% confidence limits.

b. Ratio of observed (from interviews) and estimated effort.

of the catch. Bracketed percentages refer to percent of annual catch or, for monthly proportion released, percent of monthly catch (harvest plus release).

Chinook adults were caught from May to October, peaking in July (46%) and August (29%) (Fig. 8). The 1988 total catch (harvest plus release) was the largest observed in the four year study (Table 19). Releases comprised 9% of the catch, and included 74% of the April to June catch. Releases occurred in regions 3 (73%) and 1 (17%). Harvest occurred in region 3 (80%), 4 (15%) and 1 (3%).

Chinook jacks were caught from May to October, peaking in July (25%) and September (32%) (Fig. 9). Releases comprised 15% of the catch, with the highest proportion released in July (22%). Harvest occurred in regions 3 (50%), 1 (31%) and 2 (16%). Most of the harvest in regions 1 and 2 occurred in June to August; Region 3 harvest occurred primarily in September and October.

Coho adults were caught from August to November, peaking in October (69%) (Fig. 10). Less than 1% were released. Harvest occurred pri-

Table 15c. Monthly harvest, release and angler effort in Region 2 (Pitt River to Sumas River) in the 1988 lower Fraser River sport fishery.

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Region 2 Total Number	Region 2 Total C.L. a
Number of interviews	192	787	1,303	2,052	1,622	1,992	2,828	1,950	217	12,943	-
Angler effort											
Hours	11,129	13,667	22,210	35,811	45,278	51,973	121,290	36,295	3,283	340,936	(36,984)
Days	2,782	3,106	4,533	6,283	8,878	9,118	20,912	7,407	912	63,931	-
% interviewed b	7.0%	24.3%	29.5%	32.3%	18.3%	20.8%	12.9%	26.6%	23.7%	19.8%	-
% at survey sites	37.9%	45.5%	64.8%	64.0%	56.8%	60.1%	51.9%	74.9%	67.9%	57.8%	-
Harvest											
Chinook adult	0	11	22	16	0	0	0	0	0	49	(18)
Chinook jack	0	15	149	209	159	63	32	0	0	627	(109)
Coho adult	0	0	0	0	97	454	2,982	1,318	0	4,851	(1,162)
Coho jack	0	0	0	26	3	301	2,547	1,084	0	3,961	(854)
Chum	0	0	0	0	0	0	41	4	0	45	(41)
Steelhead	0	10	24	14	22	0	14	4	0	88	(49)
Rainbow	14	0	6	13	37	53	36	24	8	191	(86)
Cutthroat	12	8	16	9	29	166	512	15	0	767	(327)
Dolly Varden	0	11	21	11	0	24	13	0	0	80	(53)
Sturgeon	0	3	0	5	11	0	4	0	0	23	(22)
Release											
Chinook adult	0	3	6	0	0	0	0	0	0	9	(7)
Coho adult	0	0	0	0	0	0	4	4	0	8	(9)
Coho jack	0	0	0	0	0	0	32	8	0	40	(34)
Steelhead	0	4	0	0	0	0	0	0	0	4	(8)
Rainbow	0	11	0	0	0	36	10	4	2	63	(58)
Cutthroat	0	3	0	0	6	74	10	3	0	96	(101)
Dolly Varden	0	0	0	0	0	0	0	0	6	6	(18)
Sturgeon	0	44	28	9	32	60	23	7	0	203	(76)

a. 95% confidence limits.

b. Ratio of observed (from interviews) and estimated effort.

marily in regions 2 (52%), 1 (33%) and 3 (14%).

Coho jacks were caught from July to November, peaking in October (51%) (Fig. 11). Less than 1% were released. Harvest occurred primarily in regions 2 (70%) and 1 (26%).

Steelhead were caught from May to November, peaking in October (62%) (Fig. 12). Releases comprised 26% of the catch, with the highest proportion released in October (33%). Releases occurred primarily in regions 3 (90%) and 4 (7%). Harvest occurred primarily in regions 3 (58%), 2 (22%) and 1 (15%). Region 2 harvest occurred primarily through August; harvest in region 3 and 4 occurred primarily after August.

Cutthroat were caught from April to November, peaking in October (33%) and November (38%) (Fig. 13). Only 6% were released. Harvest occurred primarily in regions 2 (50%) and 1 (50%).

Table 15d. Monthly harvest, release and angler effort in regions 3 (Sumas River to Harrison River) and 4 (Harrison River to the top of Waleach Slough) in the 1988 lower Fraser River sport fishery.

Region		Apr a	May a	Jun a	Jul	Aug	Sep	Oct	Nov	Dec	Number	C.L. b
Region 3	Number of interviews	0	0	8	553	368	757	552	63	2	2,303	-
	Angler effort											
	Hours	432	360	1,133	46,716	29,411	53,018	59,090	7,254	441	197,855	(34,016)
	Days	108	82	189	5,840	4,029	7,263	9,233	1,961	147	28,850	-
	% interviewed c	0.0%	0.0%	4.2%	10.3%	9.9%	12.2%	6.6%	3.7%	1.1%	9.3%	-
	% at survey sites	0.0%	0.0%	23.8%	41.5%	49.9%	57.9%	34.3%	11.4%	7.9%	43.6%	-
	Harvest											
	Chinook adult	0	0	0	908	432	281	149	0	0	1,770	(805)
	Chinook jack	0	0	0	143	208	1,072	472	0	0	1,895	(645)
	Coho adult	0	0	0	0	51	376	617	277	0	1,321	(898)
	Coho jack	0	0	0	0	0	55	163	0	0	218	(233)
	Steelhead	0	0	0	0	4	78	154	0	0	236	(102)
	Rainbow	0	0	0	7	0	0	0	0	0	7	(14)
	Cutthroat	0	0	0	0	0	0	17	0	0	17	(37)
	Dolly Varden	0	0	0	0	0	5	0	0	0	5	(8)
	Release											
	Chinook adult	0	0	87	59	0	7	0	0	0	153	(105)
	Chinook jack	0	0	0	0	35	158	96	0	0	289	(246)
	Coho adult	0	0	0	0	0	7	0	0	0	7	(14)
	Sockeye	0	0	0	7	28	0	0	0	0	35	(38)
	Chum	0	0	0	0	0	5	21	18	0	44	(44)
	Steelhead	0	0	0	0	0	28	102	0	0	130	(123)
	Rainbow	0	0	0	13	0	0	0	0	0	13	(31)
	Cutthroat	0	0	0	0	0	5	0	0	0	5	(8)
	Sturgeon	0	0	0	0	0	11	0	0	0	11	(18)
Region 4	Number of interviews d	0	0	0	0	0	0	0	0	0	0	-
	Angler effort											
	Hours	404	266	168	7,713	9,050	8,003	10,337	1,978	189	38,128	(17,128)
	Days	101	65	28	964	1,331	1,455	1,879	565	63	6,451	-
	% interviewed c	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-
	% at survey sites	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-
	Harvest											
	Chinook adult	0	0	0	83	233	5	0	0	0	321	(615)
	Chinook jack	0	0	0	28	17	75	6	0	0	126	(126)
	Coho adult	0	0	0	0	38	0	39	0	0	77	(130)
	Steelhead	0	0	0	0	0	0	23	0	0	23	(25)
	Release											
	Chinook adult	0	0	0	14	0	0	0	0	0	14	(37)
	Chinook jack	0	0	0	0	0	7	0	0	0	7	(12)
	Chum	0	0	0	0	0	0	16	20	0	36	(44)
	Steelhead	0	0	0	0	0	0	10	0	0	10	(22)

a. Region 3 effort estimated from Region 3 rod counts and Region 2 effort profiles.

b. 95% confidence limits.

c. Ratio of observed (from interviews) and estimated effort.

d. Effort estimated from Region 4 rod counts and Region 3 effort profiles; CPUE and catch was estimated from Englebrich Bar data.

Table 16. Distribution of harvest among anglers, by region and month, in the 1988 lower Fraser River sport fishery. a

Region	Month	No. of interviews	Percent of anglers harvesting: 0 fish	1 fish	2 fish	3 fish	4 fish	>4 fish	Percent of anglers harvesting at least one: Chinook adult	Chinook jack	Coho adult	Coho jack	Steelhead	Cutthroat
Region 1	Apr	8	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	May	47	96%	4%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Jun	72	81%	15%	4%	0%	0%	0%	0%	3%	0%	0%	1%	1%
	Jul	87	68%	29%	3%	0%	0%	0%	2%	25%	0%	0%	0%	1%
	Aug	72	54%	39%	7%	0%	0%	0%	0%	24%	0%	8%	0%	6%
	Sep	173	65%	27%	5%	2%	1%	0%	0%	2%	1%	26%	0%	0%
	Oct	227	63%	30%	5%	1%	1%	0%	0%	0%	31%	5%	1%	0%
	Nov	86	52%	22%	10%	10%	6%	0%	0%	0%	29%	28%	0%	4%
	Dec	1	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Region 2	Apr	137	99%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
	May	519	97%	3%	0%	0%	0%	0%	1%	1%	0%	0%	1%	0%
	Jun	781	94%	5%	0%	0%	0%	0%	1%	4%	0%	0%	1%	0%
	Jul	1,221	95%	5%	0%	0%	0%	0%	0%	4%	0%	0%	0%	0%
	Aug	1,010	96%	4%	0%	0%	0%	0%	0%	2%	0%	1%	0%	0%
	Sep	1,243	92%	6%	1%	0%	0%	0%	0%	1%	4%	3%	0%	1%
	Oct	1,864	81%	11%	5%	2%	1%	0%	0%	0%	10%	9%	0%	2%
	Nov	1,072	78%	13%	4%	2%	2%	0%	0%	0%	14%	12%	0%	0%
	Dec	197	99%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Region 3	Jun	8	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Jul	363	71%	24%	5%	0%	0%	0%	26%	5%	0%	0%	0%	0%
	Aug	178	85%	10%	3%	2%	0%	0%	3%	11%	1%	0%	1%	0%
	Sep	204	74%	20%	5%	0%	0%	0%	6%	17%	3%	0%	3%	0%
	Oct	210	84%	11%	5%	0%	0%	0%	1%	4%	6%	2%	6%	0%
	Nov	47	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Dec	2	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Total	Apr	145	99%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
	May	566	97%	3%	0%	0%	0%	0%	1%	1%	0%	0%	1%	0%
	Jun	861	93%	6%	1%	0%	0%	0%	1%	4%	0%	0%	1%	0%
	Jul	1,671	90%	9%	1%	0%	0%	0%	4%	5%	0%	0%	0%	0%
	Aug	1,260	92%	7%	1%	0%	0%	0%	0%	4%	0%	1%	0%	1%
	Sep	1,620	87%	10%	2%	0%	0%	0%	1%	3%	3%	5%	0%	1%
	Oct	2,301	80%	13%	5%	2%	1%	0%	0%	0%	12%	8%	1%	1%
	Nov	1,205	76%	14%	5%	3%	2%	0%	0%	0%	15%	14%	0%	1%
	Dec	200	99%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%

a. Data from complete trip interviews only.

Table 17. Monthly harvest of marked fish, by species and mark type, in the 1988 lower Fraser River sport fishery.

Species	Mark type a	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total Number	Total C.L. b
Chinook adult	AFC	0	0	0	31	45	0	0	0	0	76	(63)
Chinook jack	AFC	0	0	11	12	0	11	0	0	0	34	(23)
Coho adult	AFC	0	0	0	0	0	58	133	14	0	205	(92)
Coho jack	AFC	0	0	0	0	0	126	38	11	0	175	(81)
Steelhead	AFC	0	3	4	0	0	15	0	0	0	22	(21)
	RMC	0	0	0	0	22	0	0	0	0	22	(39)
Rainbow	AFC	0	0	6	0	0	15	5	0	0	26	(24)
	RMC	0	0	0	0	0	5	0	0	0	5	(8)
	AFC/RMC	0	0	0	0	0	4	0	0	0	4	(8)
Cutthroat	AFC	0	0	0	0	0	47	72	0	0	119	(104)
	LMC	0	0	0	0	0	0	24	0	0	24	(31)
	RMC	0	0	0	0	0	0	4	0	0	4	(4)
	AFC/LMC	0	0	0	0	0	0	24	3	0	27	(32)
	AFC/RMC	0	0	0	0	0	20	0	0	0	20	(41)

a. Mark types are: AFC - adipose fin clip; LMC/RMC - left or right maxillary clip.
b. 95% confidence limits.

Table 18. Angler characteristics in the 1988 lower Fraser River sport fishery.

Location	Characteristic		Apr	May-Jun	Jul-Aug	Sep-Oct	Nov-Dec	Total
Region 1	Mean angler day length (hr.)		2.8	4.8	5.7	5.8	5.0	5.5
	Target species:	- Chinook	0.0%	0.0%	27.4%	0.6%	0.0%	5.9%
		- Coho	0.0%	0.0%	0.4%	11.4%	85.0%	15.9%
		- Trout a	44.4%	21.2%	0.4%	0.2%	1.5%	3.4%
		- Anything	55.6%	78.8%	71.8%	87.8%	13.5%	74.8%
	Gear:	- Bait	66.7%	97.4%	96.3%	96.4%	100.0%	96.7%
		- Lure	33.3%	0.7%	0.8%	2.5%	0.0%	1.9%
		- Bait/Lure	0.0%	2.0%	2.9%	1.1%	0.0%	1.4%
Region 2	Mean angler day length (hr.)		4.0	4.7	5.4	5.8	4.7	5.3
	Target species:	- Chinook	0.0%	0.0%	6.8%	0.0%	0.0%	1.9%
		- Coho	0.0%	0.0%	0.4%	1.8%	6.9%	1.9%
		- Trout a	1.6%	0.6%	0.6%	2.9%	0.0%	1.4%
		- Sturgeon	0.0%	0.2%	0.1%	0.0%	0.0%	0.1%
		- Anything	98.4%	99.2%	92.2%	95.3%	93.1%	94.7%
	Gear:	- Bait	99.5%	99.0%	99.1%	99.4%	98.3%	99.0%
		- Lure	0.0%	0.1%	0.1%	0.2%	0.2%	0.1%
		- Bait/Lure	0.5%	0.9%	0.8%	0.5%	1.5%	0.8%
Region 3	Mean angler day length (hr.)		-	6.0	7.8	6.8	3.7	7.2
	Target species:	- Chinook	-	100.0%	4.3%	0.0%	0.0%	1.7%
		- Anything	-	0.0%	95.7%	100.0%	100.0%	98.3%
	Gear:	- Bait	-	25.0%	1.6%	30.4%	73.8%	20.1%
		- Lure	-	75.0%	85.4%	48.4%	16.9%	62.4%
		- Bait/Lure	-	0.0%	13.0%	21.3%	9.2%	17.5%

a. Includes steelhead, rainbow, cutthroat or Dolly Varden.

Dolly Varden were caught from May to November, peaking in October (26%) (Fig. 14). Less than 1% were released. Harvest occurred in regions 1 (94%) and 2 (6%).

Sturgeon were caught from May to November (Fig. 15), primarily in Region 2. Catch peaked in September (30%); 90% were released.

Marked Catch

The estimated harvest marked by the removal of the adipose fin or the left or right maxillary bone is reported in Table 17. The adipose fin clip incidence was 0.035 for chinook adults, 0.009 for chinook jacks, 0.022 for coho adults, 0.031 for coho jacks, 0.054 for steelhead, 0.109 for rainbow and 0.108 for cutthroat. The maxillary clip incidence was 0.054 (right) for steelhead, 0.033 (right) for rainbow and 0.033 (left) and 0.016 (right) for cutthroat.

Angler Characteristics

The average angler trip ranged from 2.8 to 7.8 hours (Table 18). Trip length was shortest early and late in the study, and was longest in Region 3.

Anglers attempted to harvest coho (3%), chinook (2%) or trout (1%); 94% had no species preference and less than 1% angled for sturgeon. In Region 1, 16% angled for coho, with the proportion increasing after August, a significant proportion of the July-August effort was directed at chinook, and a significant proportion of the April-June effort was directed at trout (Table 18).

Bait (88%) was the most commonly used gear, followed by lures (9%) and bait/lure combinations (3%); none used flies. Bait was the preferred gear in regions 1 and 2 (Table 18). In regions 3 and 4, lures were the preferred gear.

DISCUSSION

GENERAL

The recreational fishery in the lower Fraser River is *believed* to be the largest in British Columbia (most river sport fisheries have not been adequately assessed) and is among the largest on the Pacific Coast. Annual angler effort averaged over 783,000 hours or 152,000 trips, and angler counts during the peak activity period approached 1,700. In comparison, effort in the 1991-1992 Kitimat River sport fisheries averaged less than 130,000 hours per year, with peak counts of 400-500 (J.O. Thomas, pers. comm.), while salmonid directed effort in the 1991 lower Columbia River fishery was 140,000 trips (Melcher and King 1992). While study area effort was high, salmon harvest (Table 19) and harvest per trip (HPT) were relatively low; annual chinook and seasonal coho adult HPT averaged 0.01 and 0.06, respectively. In comparison, HPT was considerably higher in marine and tributary sport fisheries. For example, chinook and coho HPT averaged 0.27 and 1.22, respectively, in the 1985-1988 Strait of Georgia sport fisheries (Shardlow and Collicutt 1989), 0.47 and 0.03 in the 1984-1988 Alberni Inlet sport fisheries (J.O. Thomas and Associates MS 1988) and 0.03 and 0.66 in the 1988 Vedder-Chilliwack sport fishery (Whyte and Schubert 1990). Salmon HPT was similar in the lower Columbia and lower Fraser rivers, but was not directly comparable because the Columbia River salmon and sturgeon fishery data were not presented separately. Roughly similar HPT does suggest, however, that low angler effectiveness may be a characteristic of sport fisheries in the lower mainstems of large rivers.

The lower Fraser River sport fishery was a sedentary, social one where anglers tended to cluster in groups at a relatively small number

Table 19. Annual angler effort, survey efficiency, harvest and release by species, and chinook and coho catchability, harvest rate and harvest per angler hour in the 1985-88 lower Fraser River sport fishery.

	1985	1986	1987	1988
Study period - start	Sep	May	Mar	Apr
- end	Nov	Dec	Dec	Dec
Angler effort				
Hours	485,931	771,595	794,658	722,590
Days	100,627	156,830	153,963	126,014
% interviewed	6.2%	12.6%	11.9%	12.8%
% at survey sites	34.5%	38.1%	39.8%	42.7%
Harvest				
Chinook adult				
Upper Fraser	n/a	29	1,553	1,750
Harrison	596	787	559	449
Chinook jack	967	7,361	2,015	3,826
Coho adult	3,403	4,598	5,264	9,262
Coho jack	10,225	9,211	19,525	5,640
Sockeye	0	0	39	204
Pink	319	0	18	0
Chum	26	184	37	284
Steelhead	899	576	803	409
Rainbow	0	228	356	276
Cutthroat	2,166	2,098	3,808	1,536
Dolly Varden	223	1,009	1,310	1,322
Sturgeon	0	49	114	23
Release				
Chinook adult	132	223	108	211
Chinook jack	0	78	109	682
Coho adult	16	43	19	15
Coho jack	106	545	1,150	40
Sockeye	0	31	3	50
Pink	6,293	9	852	0
Chum	806	456	375	80
Steelhead	108	757	217	144
Rainbow	0	9	119	98
Cutthroat	323	344	1,752	101
Dolly Varden	0	31	149	6
Sturgeon	124	305	442	214
Catchability Coefficient (x 10^-9)				
Upper Fraser River Chinook Adults	n/a	0.8	43.1	53.7
Harrison River Chinook Adults	6.9	9.4	11.3	18.2
Fraser River Coho Adults	53.8	39.2	42.3	94.7
Harvest Rate (%)				
Upper Fraser River Chinook Adults	n/a	0.02%	1.29%	1.41%
Harrison River Chinook Adults	0.34%	0.47%	0.56%	0.83%
Fraser River Coho Adults	2.62%	1.94%	2.10%	4.34%
HPUE				
Upper Fraser River Chinook Adults	n/a	0.0001	0.0052	0.0067
Harrison River Chinook Adults	0.0012	0.0016	0.0011	0.0010
Fraser River Coho Adults	0.0070	0.0093	0.0106	0.0202

of sites. With few exceptions, anglers fished a single site per trip, generally sitting in lawn chairs beside rods set in holders driven into the gravel. The most common fishing technique was still-fishing with bait, although artificial lures were common in the upriver areas. Except during the fall coho fishery, few anglers identified a specific species as their intended harvest but, instead, fished for "anything". Angler effort was relatively low during the spring, increasing in response to the arrival of summer run chinook, and peaking with the arrival of coho in the fall. Effort increased dramatically on the Labour Day weekend, the traditional start of the coho fishery. Angler day length was relatively long, averaging five or more hours during the July to October fishery (trip length after that period tended to be constrained by daylight hours). In contrast, angler day length in most upper Fraser River sport fisheries averaged four hours or less (Schubert 1990, 1992a; Schubert and Whyte 1992). Despite a long fishing day, angler success was relatively poor. Only 14% of the anglers harvested one fish of any species during the average fishing trip. The catchability coefficient, a measure of the harvest rate of one hour of effort, was low for both chinook and coho. Adult catchability ranged from 7×10^{-9} to 95×10^{-9} for Harrison and upper Fraser chinook and Fraser coho (Table 19). In contrast, coho catchability in the Vedder-Chilliwack River (Whyte and Schubert 1990) and chinook catchability in the Vedder-Chilliwack and upper Fraser rivers (Schubert and Whyte 1992) was three orders of magnitude higher. Survey efficiency, measured as the proportion of the total angler hours which were recorded by interviews, was generally good, totalling 11.3%. In comparison, survey efficiency averaged 4.6% in the 1983-1988 Strait of Georgia fisheries (Shardlow and Collicutt 1989) and 5.8% in 1984-1988 Barkley Sound fisheries (J.O. Thomas and Associates MS 1988), and ranged from 6% to 100% in five Fraser River fisheries in 1990 (Schubert and Whyte 1992).

The geomorphology of the lower Fraser River largely defined the character of the sport fishery. In regions 1 and 2, the river has two important features: a) the gradient is relatively low and the river is slow moving and deep as it flows primarily in a dyked, single, broad channel; and b) the river is tidal at all stages of the hydrograph as far upstream as Mission (Hoos and Packman 1974). These characteristics influenced the sport fishery in two ways. First, because there was little lateral flooding at high flows, angling continued through the spring freshet; most of the March to June study area effort occurred in this area. Second, tidal action resulted in distinctly different flow patterns during the ebb, flood and slack tides, especially in Region 1. This fishery was effective on species such as coho adults and jacks, which tended to wander laterally during flood and slack tides, but relatively ineffective on chinook adults (and steelhead), which test fishery data show migrate primarily in deep water (DFO, unpublished).

In Region 3 and, to a lesser extent, Region 4, the river flows in a wandering, gravel-bed channel (Kellerhals *et al.* MS 1987) and is under only minor tidal influence. The spring freshet deposits large quantities of gravel in Region 3, creating numerous gravel bars and a constantly shifting river channel (Fraser River Board 1963). The flood channel is wide but, as water levels decline, the river flows in several shallower, higher velocity channels. This influenced the fishery in two ways. First, because of extensive lateral flooding during the spring freshet, most fishing sites were

inundated until the water receded in June or July. As a result, very little angling occurred until June, when effective chinook sites such as Queen's Island began to emerge. Other sites, such as Bowmans's, did not emerge until mid-August. Second, species such as steelhead and chinook adults were considerably more vulnerable to this sport fishery. These species, relatively nonvulnerable in the deep, broad, lower river channel, were forced by channel morphology to migrate closer to the surface and to the shore based fishery.

Fishery attributes within each region are described in greater detail below.

Region 1

Region 1 angler effort (the sum of the average monthly effort during the study period) averaged 174,000 hours from March to December, 22% of the study period total. Effort peaked from September to November, declining during that period from 133,000 hours in 1986 to 104,000 hours in 1988 (Fig. 7). Although the peak coincided with the Expo-86 World Exposition, less than 1% of the interviewed anglers were present for Expo-86.

Survey efficiency was poor, despite stationing surveyors at two sites with the largest number of anglers in most months. Only 4% of the effort was interviewed, and only 18% occurred at the surveyed sites. This reflected three factors. First, because Region 1 is located in an urban area, river access is excellent. Consequently, anglers were dispersed and the proportion fishing at the major sites was less than in other regions. Second, anglers responded to tide changes by moving between sites during a trip, fishing incoming tides on the North Arm and outgoing tides on the Main Arm. As a result, interviews at fixed locations often recorded only partial fishing trips. Third, angling at Brownsville, the largest site in Region 1, was impaired by the 1987-1988 construction of the SkyTrain Bridge. As a result, many Brownsville anglers moved to other sites where they were not vulnerable to the survey.

This area supported a year-round fishery directed at several species of trout and char, and seasonal fisheries directed at chinook and coho salmon during their spawning migrations. Virtually all anglers still-fished using bait. Effort in the December to May trout fishery was low, averaging 3,500 hours per month during the study months. The harvest consisted almost entirely of Dolly Varden char and cutthroat, rainbow and steelhead trout. From June to August, however, chinook became the preferred species and effort increased to an average 16,200 hours per month. The harvest was dominated by chinook jacks, although Dolly Varden char and cutthroat trout remained significant. From September to November, anglers fished primarily for coho and effort increased to an average 36,900 hours per month. The harvest was dominated by coho salmon (especially jacks) although, in absolute numbers, the Dolly Varden char and cutthroat trout harvest remained similar to previous months.

Only 1% (average 18 fish per year) and 8% (57 fish per year) of the study period harvest of chinook adults and steelhead, respectively, occurred in Region 1. Harvest rates and HPUE on upper Fraser chinook adults, which migrated through the study area from April through August, and Harrison chinook adults, which migrated after September 1, were less than 0.1% and 0.0011, respectively (Table 20; Fig. 8). Both values were considerably higher for upper Fraser stocks; however, they were low relative to Fraser River tributary sport fisheries where harvest rates ranged

from 0.4% to 12.0% and HPUE ranged from 0.0092 to 0.0886 (Schubert and Whyte 1992). In contrast, the chinook jack harvest accounted for 27% of the study period total, primarily from spring and summer migrant upper Fraser stocks. The HPUE of these stocks ranged from 0.0064 to 0.0277, considerably higher than for adults and the highest in the study area (Fig. 9). Apparent differential catchability between chinook jacks and adults may reflect a more shore oriented migratory behaviour by the former, or a greater tendency for lateral wandering during flood and slack tides. Because the river in Region 1 is wide, slow and deep, shore oriented fish would be more vulnerable to sport gear.

Region 1 had the most successful coho fishery in the study area, accounting for 38% (average 2,126 fish per year) and 57% (6,305 fish per year) of the study period harvest of coho adults and jacks, respectively. Over two-thirds of the Region 1 anglers fishing in October and November identified coho as their target, and over one-third harvested at least one coho adult or jack per trip. Coho adult catchability and HPUE (because coho adults were caught almost exclusively in September to December, HPUE was calculated from angler effort during that period) were consistently the highest in the study area, while harvest rates were comparable to those in regions 2 and 3 (Tables 20-22). As with chinook adults, however, the coho fishery was ineffective relative to tributary fisheries such as in the Vedder-Chilliwack River, where catchability, HPUE and harvest rate were an order of magnitude higher (Whyte and Schubert 1990).

Region 1 also had the study area's most successful Dolly Varden fishery, with 87% (average 840 fish per year) of the total harvest and by far the highest CPUE (Fig. 14). Although catches were highest during the fall, when Dolly Varden returned to their natal streams to spawn (Carl *et al.* 1967), they were caught through the study period.

Region 2

The Region 2 fishery was the largest in the study area in both angler effort and geographic area. Angler effort from March to December averaged 359,000 hours, 45% of the study period total. Effort peaked from September to November, increasing during that period from 172,000 hours in 1985 to over 210,000 hours in 1987-1988 (Fig. 7). The early season fishery was also significant because, unlike in upstream areas, most sites remained fishable through the spring freshet. Over 60% of the March to June anglers fished in this area.

Survey efficiency was the highest in the study area, with 15% of the effort interviewed and 48% occurring at the surveyed sites. This reflected: a) the concentration of anglers at a few major sites (Edgewater, Duncan and Standard Gas bars were consistently among the five largest study area sites); and b) high survey effort, with surveyors stationed at up to five sites per month.

Regions 1 and 2 were similar in river morphology and in species composition and abundance. As a result, the annual fishing patterns were similar, with a year-round trout fishery and seasonal chinook and coho fisheries. Virtually all anglers still-fished using bait. In the December to April trout fishery, effort averaged only 7,400 hours per month during the study months. The harvest consisted almost entirely of Dolly Varden char and cutthroat, rainbow and steelhead trout. From May to August, chinook became the preferred species and effort increased to an average 33,900 hours per month. The

Table 20. Annual angler effort, survey efficiency, harvest and release by species, and chinook and coho catchability, harvest rate and harvest per angler hour in Region 1 in the 1985-88 lower Fraser River sport fishery.

	1985	1986	1987	1988
Angler effort				
Hours	88,818	203,167	182,269	145,671
% interviewed	2.8%	5.6%	4.0%	4.5%
% at survey sites	14.5%	22.7%	17.6%	17.6%
Harvest				
Chinook adult				
Upper Fraser	n/a	0	0	45
Harrison	0	0	15	14
Chinook jack	17	1,855	416	1,178
Coho adult	1,293	1,819	2,378	3,013
Coho jack	5,524	4,317	13,916	1,461
Sockeye	0	0	0	204
Pink	229	0	0	0
Chum	0	121	15	239
Steelhead	0	156	8	62
Rainbow	0	81	50	78
Cutthroat	432	61	1,179	752
Dolly Varden	177	794	1,150	1,237
Release				
Chinook adult	0	18	13	35
Chinook jack	0	22	77	386
Coho adult	0	12	0	0
Coho jack	35	523	1,077	0
Sockeye	0	0	0	15
Pink	71	0	24	0
Steelhead	17	10	63	0
Rainbow	0	9	0	22
Cutthroat	33	42	327	0
Dolly Varden	0	25	119	0
Sturgeon	41	136	97	0
Catchability Coefficient (x 10^-9)				
Upper Fraser River Chinook Adults	n/a	0.0	0.0	8.9
Harrison River Chinook Adults	0.0	0.0	1.3	2.5
Fraser River Coho Adults	111.9	56.5	81.0	134.5
Harvest Rate (%)				
Upper Fraser River Chinook Adults	n/a	0.00%	0.00%	0.04%
Harrison River Chinook Adults	0.00%	0.00%	0.02%	0.03%
Fraser River Coho Adults	0.99%	0.77%	0.95%	1.41%
HPUE				
Upper Fraser River Chinook Adults	n/a	0.0000	0.0000	0.0011
Harrison River Chinook Adults	0.0000	0.0000	0.0001	0.0001
Fraser River Coho Adults	0.0146	0.0134	0.0203	0.0287

harvest was dominated by chinook jacks, although trout, chinook adults, sturgeon and coho were significant in August. From September to November, anglers fished primarily for coho and effort increased to an average 65,700 hours per month. The harvest was dominated by coho salmon, especially jacks, although the cutthroat trout harvest also remained significant.

Eight percent (average of 118 fish per year) and 18% (average of 124 fish) of the study period harvest of chinook adults and steelhead, respectively, occurred in Region 2. Steelhead were harvested in most months; however, most were taken from summer migrant stocks before the end of August (Fig. 12). The chinook adult harvest was also the earliest in the study area, a reflection of the fishability of most Region 2 sites through the freshet. Most of the harvest occurred in May and June, and most were harvested illegally during the closed season. Harvest rates and HPUE on upper Fraser and Harrison chinook adults were slightly higher than in Region 1 (Tables 20-21) but were trivial relative to other Fraser River sport fisheries.

Region 2 accounted for 42% (average of 2,366 fish per year) and 41% (average of 4,511 fish) of the study period harvest of coho adults and jacks, respectively. Although a substantial proportion of the study area coho adult harvest occurred in this region, CPUE (Fig. 10) and catchability were lower than in Region 1, while harvest rates were similar (Tables 20-21). While over one-quarter of the anglers fishing in October and November identified coho as their target, less than one-fifth harvested at least one coho adult or jack per trip.

The sturgeon catch in Region 2 comprised three-quarters of the study area total. Over 80% of the catch was undersize (below the minimum size limit of 100 cm) and released. The current study focused primarily on shore-based anglers fishing during daylight hours; however, a substantial portion of the sturgeon fishery occurred from boats at night. Because these anglers were not vulnerable to the surveyors, the sturgeon catch was an underestimate.

Region 3

Region 3 angler effort averaged 213,000 hours from March to December, 28% of the study period total. Effort peaked from August to October, declining during that period from 184,000 hours in 1985 to 142,000 hours in 1988 (Fig. 7). Effort peaked a month earlier than in regions 1 and 2, reflecting poor angling conditions in November, the September arrival of coho and steelhead, and the intensive summer chinook fishery. The annual monthly effort pattern varied with changes in the chinook salmon regulations. In September 1985, the chinook adult fishery was reopened for the first time since 1980; angler effort during September was almost 50% higher than in the same month in any other year. Effort also increased in response to the reopening of the July chinook adult fishery in 1987. In 1986, angler effort in July was only 7,300 hours. After reopening the fishery, however, July angler effort increased to 27,900 in 1987 and 46,700 in 1988. Schubert (1992a) reported a similar effort response when the June chinook adult fishery was reopened 1989.

Survey efficiency was high, with 12% of the effort interviewed and 45% occurring at the surveyed sites. As in Region 2, this reflected: a) the concentration of anglers at a few major sites (Bowman's, Wing Dam or Englebrich were among the five largest sites); and b) high survey effort, with surveyors stationed at up to four sites per month.

Table 21. Annual angler effort, survey efficiency, harvest and release by species, and chinook and coho catchability, harvest rate and harvest per angler hour in Region 2 in the 1985-88 lower Fraser River sport fishery.

	1985	1986	1987	1988
Angler effort				
Hours	171,554	351,118	375,410	340,936
% interviewed	7.5%	15.5%	14.2%	19.8%
% at survey sites	40.0%	44.6%	47.1%	57.8%
Harvest				
Chinook adult				
Upper Fraser	n/a	19	295	49
Harrison	34	70	5	0
Chinook jack	144	2,074	540	627
Coho adult	1,585	1,353	1,674	4,851
Coho jack	4,354	4,403	5,326	3,961
Sockeye	0	0	24	0
Pink	42	0	6	0
Chum	26	30	21	45
Steelhead	81	91	235	88
Rainbow	0	147	304	191
Cutthroat	1,673	1,810	1,548	767
Dolly Varden	48	160	137	80
Sturgeon	0	37	114	23
Release				
Chinook adult	69	22	43	9
Chinook jack	0	13	10	0
Coho adult	18	18	11	8
Coho jack	71	14	40	40
Pink	49	9	0	0
Chum	557	74	0	0
Steelhead	16	35	88	4
Rainbow	0	0	70	63
Cutthroat	273	262	444	96
Dolly Varden	0	6	30	6
Sturgeon	66	169	342	203
Catchability Coefficient (x 10^-9)				
Upper Fraser River Chinook Adults	n/a	1.0	15.3	3.1
Harrison River Chinook Adults	1.1	2.1	0.2	0.0
Fraser River Coho Adults	76.0	3[illegible].3	32.0	112.8
Harvest Rate (%)				
Upper Fraser River Chinook Adults	n/a	0.01%	0.25%	0.04%
Harrison River Chinook Adults	0.02%	0.04%	0.01%	0.00%
Fraser River Coho Adults	1.30%	0.59%	0.69%	2.40%
HPUE				
Upper Fraser River Chinook Adults	n/a	0.0001	0.0018	0.0004
Harrison River Chinook Adults	0.0002	0.0004	0.0000	0.0000
Fraser River Coho Adults	0.0092	0.0069	0.0078	0.0228

Because most fishing sites were inundated until the spring freshet receded, angler effort from March to June averaged only 1,700 hours per month. The harvest, consisting of chinook salmon and cutthroat and steelhead trout, was also minimal. In July and August, chinook became the preferred species. Effort increased to an average 28,100 hours per month and the harvest was dominated by chinook adults and jacks. Effort peaked in September and October at 69,400 hours as anglers fished for steelhead trout and coho and chinook salmon. The harvest was dominated by chinook adults and jacks, coho adults and jacks, and steelhead trout. Angler species preference was similar in November and December, but effort declined to only 6,200 hours per month and harvest was minor. This sharp seasonal effort decline occurred a month earlier than in regions 1 and 2.

In most months, the majority of Region 3 anglers fished using artificial lures; however, unlike regions 1 and 2, a variety of methods were used including bait and baited lures. Angler day length in Region 3 was the longest in the study area, reflecting the high proportion of anglers camping overnight at such sites as Englebrich, Queen's Island, Bowman's and Wing Dam.

Region 3 had the study area's most effective chinook adult and steelhead trout fishery, accounting for 85% (average of 1,210 fish per year) and 62% (average of 413 fish), respectively, of the total harvest. Steelhead were caught almost entirely in the fall, from September to December migrating Chilcotin, Thompson and Vedder-Chilliwack stocks. Chinook adults were caught from June through October. Harvest rates, HPUE and catchability coefficients for upper Fraser and Harrison chinook adults were an order of magnitude higher than in regions 1 and 2 (Tables 20-22) and were generally within the range reported for other Fraser River sport fisheries (Schubert and Whyte 1992). Catchability was consistently higher in upper Fraser versus Harrison chinook. This may have reflected behaviour differences between stocks, more favourable fishing conditions during July and August or a systematic underestimation of upper Fraser River chinook abundance. Upper Fraser chinook escapements were estimated using visual method which are subject to negative bias and high variance; Harrison chinook escapements were estimated using more systematic mark-recapture methods. The abundance of Harrison chinook declined sharply during the study period, from almost 180,000 in 1985 to less than 50,000 in 1988 (Starr and Schubert 1990). At the same time, harvest rates and catchability progressively increased in a clearly depensatory pattern of fishing mortality. Chinook adults and steelhead trout showed a similar pattern in the study area sport fisheries in that both were relatively nonvulnerable in the deep, low velocity, single channel areas which characterize regions 1 and 2. In Region 3, however, vulnerability increased dramatically, possibly a result of the relatively shallow water and higher velocity flows which may have forced migrants closer to the shore.

Only 19% (average of 1,095 fish per year) and 3% (average of 320 fish) of the study period harvest of coho adults and jacks, respectively, occurred in Region 3. Although catches were low, coho adult catchability, harvest rate and HPUE was similar to Region 2 (Tables 21-22). The Region 3 coho fishery was distinctive in that a higher proportion of the coho adult catch occurred in August and September, and few jacks were harvested. This may be due to a higher proportion in the catch of Thompson River coho and a lower proportion of Vedder-Chilliwack hatchery

Table 22. Annual angler effort, survey efficiency, harvest and release by species, and chinook and coho catchability, harvest rate and harvest per angler hour in Region 3 in the 1985-88 lower Fraser River sport fishery.

	1985	1986	1987	1988
Angler effort				
Hours	191,296	188,879	204,527	197,855
% interviewed	6.7%	15.9%	16.1%	9.3%
% at survey sites	41.3%	44.6%	49.4%	43.6%
Harvest				
Chinook adult				
Upper Fraser	n/a	10	1,258	1,340
Harrison	558	716	526	430
Chinook jack	792	3,285	1,049	1,895
Coho adult	484	1,406	1,168	1,321
Coho jack	309	474	279	218
Sockeye	0	0	15	0
Pink	48	0	9	0
Chum	0	33	0	0
Steelhead	684	282	451	236
Rainbow	0	0	2	7
Cutthroat	61	227	1,065	17
Dolly Varden	0	40	23	5
Sturgeon	0	12	0	0
Release				
Chinook adult	63	163	50	153
Chinook jack	0	39	22	289
Coho adult	0	13	8	7
Coho jack	0	8	33	0
Sockeye	0	29	3	35
Pink	4,483	0	717	0
Chum	239	374	372	44
Steelhead	73	673	55	130
Rainbow	0	0	49	13
Cutthroat	12	40	981	5
Sturgeon	12	0	3	11
Catchability Coefficient (x 10^-9)				
Upper Fraser River Chinook Adults	n/a	1.8	167.9	144.2
Harrison River Chinook Adults	16.6	29.9	46.3	94.6
Fraser River Coho Adults	35.1	106.4	84.3	116.0
Harvest Rate (%)				
Upper Fraser River Chinook Adults	n/a	0.01%	1.06%	1.10%
Harrison River Chinook Adults	0.32%	0.44%	0.65%	1.13%
Fraser River Coho Adults	0.67%	1.55%	1.19%	1.39%
HPUE				
Upper Fraser River Chinook Adults	n/a	0.0002	0.0200	0.0178
Harrison River Chinook Adults	0.0029	0.0049	0.0037	0.0036
Fraser River Coho Adults	0.0025	0.0096	0.0083	0.0110

coho. The former migrate earlier and include few jacks and the latter, which were present only in the lower portions of Region 3, had a large jack component which would be less vulnerable to this fishery.

Region 4

The Region 4 fishery was minor in both angler effort and catch (Table 23). Effort averaged 37,000 hours from March to December, only 5% of the study period total. The annual effort pattern was similar to Region 3, with only minor effort until August. Effort peaked from August to October, increasing during that period from 22,200 hours in 1986 to 27,400 hours in 1988 (Fig. 7). Survey efficiency was the poorest in the study area, with 3% of the effort interviewed and 16% occurring at the surveyed sites. This reflected the limited and dispersed Region 4 angler effort, and led to the removal of the surveyor in 1988.

Region 4 accounted for 6% of the study area harvest of chinook adults, 2% of the chinook jacks and less than 1% of the coho jacks and adults. Two factors may account for the poor success of this fishery. First, the river flows primarily in a single channel confined by bedrock walls or gravel terraces (Kellerhals *et al.* MS 1987). This may reduce the shore orientation of chinook adults, which prefer to migrate in deep water. Second, coho abundance was less than other regions because a large proportion of the resource either spawned in tributaries in, or returned to hatcheries in, regions 1, 2 and 3. As a result, HPUE was low and few anglers were attracted to the region. Region 4 did have an effective steelhead fishery (Fig. 12), however, accounting for 12% of the study area harvest. Steelhead were vulnerable at specific sites such as Gill Road and Ferry Island near Agassiz, and at Landstrom Road and the Coquihalla River mouth near Hope.

An assumption underlying the design of this study was that a significant proportion of the regional angler effort would occur at the surveyed sites. Because Region 4 angler effort was low and dispersed, however, few anglers fished at these sites. This had two potential impacts on the results: a) the daily effort profile and CPUE at the surveyed sites may have been nonrepresentative of the region, potentially biasing the results; and b) the small number of interviews reduced estimation precision. To compensate for the latter, data from Englebrich (Region 3) were also used to estimate Region 4 catch and effort. This would bias the results if statistics from Englebrich and the Region 4 sites differed; however, CPUE comparisons by species/month between Englebrich and Ferry Island showed no significant difference in over 95% of the pairs. Bias, therefore, was unlikely.

Because few anglers had been observed in the upper portion of Region 4, the upper boundary was moved from the Coquihalla River to the top of Waleach Slough (Fig. 5) on September 1, 1986. The excluded section accounted for approximately 55% of the regional area but only 30% of the regional effort. Comparisons between these periods, therefore, should compensate for this change.

In view of the above points, effort, CPUE and catch in Region 4 should be interpreted with caution.

EVALUATION OF REGULATIONS

The 1985-1988 study provided an opportunity to evaluate: a) angler compliance with three regulatory measures; and b) fishery responses to two regulatory changes. It should be noted that the evaluations of compliance are minimum values. Serious

Table 23. Annual angler effort, survey efficiency, harvest and release by species, and chinook and coho catchability, harvest rate and harvest per angler hour in Region 4 in the 1985-88 lower Fraser River sport fishery.

	1985	1986	1987	1988
Angler effort				
Hours	34,263	28,431	32,452	38,128
% interviewed	5.6%	3.8%	2.8%	0.0%
% at survey sites	20.1%	25.3%	20.9%	0.0%
Harvest				
Chinook adult				
Upper Fraser	n/a	0	0	316
Harrison	4	1	13	5
Chinook jack	14	147	10	126
Coho adult	41	20	44	77
Coho jack	38	17	4	0
Pink	0	0	3	0
Chum	0	0	1	0
Steelhead	134	47	109	23
Cutthroat	0	0	16	0
Dolly Varden	0	15	0	0
Release				
Chinook adult	0	20	2	14
Chinook jack	0	4	0	7
Sockeye	0	2	0	0
Pink	1,690	0	111	0
Chum	10	8	3	36
Steelhead	2	39	11	10
Cutthroat	5	0	0	0
Sturgeon	5	0	0	0
Catchability Coefficient (x 10^-9)				
Upper Fraser River Chinook Adults	n/a	0.0	0.0	148.9
Harrison River Chinook Adults	0.7	0.3	7.1	6.5
Fraser River Coho Adults	32.7	20.6	38.6	59.6
Harvest Rate (%)				
Upper Fraser River Chinook Adults	n/a	0.00%	0.00%	0.26%
Harrison River Chinook Adults	0.00%	0.00%	0.02%	0.01%
Fraser River Coho Adults	0.11%	0.04%	0.09%	0.12%
HPUE				
Upper Fraser River Chinook Adults	n/a	0.0000	0.0000	0.0179
Harrison River Chinook Adults	0.0001	0.0001	0.0006	0.0002
Fraser River Coho Adults	0.0012	0.0011	0.0019	0.0038

poachers would have avoided the surveyed sites.

Chinook Salmon

Improved returns to the river of chinook adults permitted the expansion of the season from September to December in 1985-1986 to July to December in 1987-1988. This allowed an evaluation of both fishery responses to regulatory change, and angler compliance in a climate of increasing expectations.

There was little change in the fisheries of regions 1 and 2, probably because chinook adults were relatively nonvulnerable in these areas. In Region 3, however, the 1987-1988 fishery changed substantially from 1986. CPUE (harvest and release) increased from 0.0086 and 0.0006 in July and August 1986, respectively (Appendix 8), to 0.0404 and 0.0022 in 1987 (Appendix 12) and 0.0207 and 0.0147 in 1988 (Appendix 16). These changes occurred despite slight reductions in total abundance, suggesting that: a) during closures, anglers can redirect effort onto jacks or other species; and b) experienced anglers preferred not to fish during the closure. Angler effort increased in July (7,300, 27,900 and 46,700 hours in 1986, 1987 and 1988, respectively) but not in August (31,700, 25,253 and 29,411 hours in 1986, 1987 and 1988, respectively). This indicates that regulatory change can result in a large effort response providing the abundance is sufficient to attract anglers.

Regulatory compliance also differed between regions 2 and 3. In Region 2, anglers were able to fish through the spring freshet. Because of perceived inequities between the regulation of their fishery and other inriver and Strait of Georgia fisheries, many anglers were reluctant to release landed chinook adults during the closed period (Appendix 8b). In contrast, fishing in Region 3 was difficult during the spring freshet. Many anglers did not fish during the closures, but those who did fish tended to comply with the regulations (Appendix 8c). One reason for this difference was the existence of the Fraser Valley Salmon Society (FVSS), a sport group consisting primarily of Region 3 anglers. Because the FVSS lobbied with the Department during the study period, Region 3 anglers had greater political awareness than other anglers and may have used regulatory compliance as a bargaining tool for expanded access to the chinook resource.

Coho Salmon

CPUE in the lower Fraser River sport fishery was sufficiently low that the fishery was not normally constrained by the aggregate daily salmon bag limit. In 1987, however, unusually high coho CPUE permitted an evaluation of angler compliance with daily bag limits. Compliance was generally good; however, in Region 1, the most effective coho fishery, almost 9% of the anglers who had harvested a salmon exceeded the aggregate daily limit. Most of these anglers were unaware that they had violated the regulations, indicating a need for improved angler education in this area.

Steelhead Trout

Two steelhead trout regulations were evaluated: a) an emergency closure of the fishery in October and November 1986; and b) a regulation requiring anglers to leave the river after harvesting one steelhead trout.

Of the 832 steelhead landed in regions 3 and 4 (regions 1 and 2 were not closed) in October and November 1986, 19% (158) were harvested illeg-

ally. Because serious poachers would have avoided the surveyed sites, this indicates that compliance with this closure was poor. While this may have reflected a lack of awareness of the closure, this was unlikely because enforcement was intensive (P. Caverhill, pers. comm.).

Anglers were required by regulation to leave the river after harvesting a single steelhead. If compliance with this regulation was total, HPUE from complete trip interviews would be a positive value and HPUE from incomplete trip interviews would be zero. In 67 site and month-specific paired comparisons of HPUE from complete and incomplete trip interviews, 32 (48%) of the incomplete trip interviews had a non-zero HPUE. In these pairs, while complete trip HPUE was usually higher, the difference was not significant in most cases. This suggests that, while many anglers may have complied with this regulation, overall compliance was poor.

INCOMPLETE TRIP INTERVIEW BIAS

Other studies identified a negative bias in HPUE estimated from incomplete trip interviews (interviews from anglers contacted during their fishing trip) when the fishery was managed to restrictive daily harvest limits (Schubert 1989). Because both the chinook adult and steelhead trout fisheries were managed to daily limits of one, this potential bias was evaluated for these species. In 125 comparisons, by site and month, of HPUE calculated from complete trip and combined trip interviews, significant differences were noted only in three; those data were adjusted to correct that bias. In view of the above, and because an evaluation of the study data showed that HPUE was clearly independent of trip length, it was concluded that incomplete trip interview bias did not influence the results of this study.

SUMMARY

1. The sport fishery of the lower Fraser River was assessed in 1985, 1986, 1987 and 1988. The study area extended approximately from the river mouth upstream to the top of Waleach Slough (to the Coquihalla River in 1985), and was divided into four regions delineated by the Pitt, Sumas and Harrison rivers. The annual study periods were: September to November in 1985; May to December in 1986; March to December in 1987; and April to December in 1988.

2. The fishery was assessed using an access point-overflight study design developed for this fishery. Five surveyors were stationed at major effort concentrations, with survey sites changing monthly with shifting patterns of angler effort. Twenty-one sites were evaluated during the study period. The surveyors collected catch per angler hour data and recorded the hourly effort profile. In conjunction with 202 aerial angler counts of the total study area, these data were used to estimate regional harvest, release and angler effort.

3. The surveyors collected 57,124 angler interviews, 5,718 in 1985, 18,121 in 1986, 16,858 in 1987 and 16,427 in 1988. The interviews recorded 11.3% of the total study period angler effort. Each interview recorded the following information: length of time angling, preferred species, number and species of fish harvested and released, identifying marks on harvested fish, and gear type.

4. The lower Fraser River sport fishery is believed to be the

largest river sport fishery in British Columbia. Study area angler effort was estimated at: 485,931 hours in September to November 1985; 771,595 hours in May to December 1986; 794,658 hours in March to December 1987; and 722,590 hours in April to December 1988. The 95% confience limits for the annual effort estimates were normally within 7%-8% of the estimate. Annual effort peaked in September and October.

5. Annual harvest ranged from 596 to 2,199 chinook adults, 967 to 7,361 chinook jacks, 3,403 to 9,262 coho adults, 5,640 to 19,525 coho jacks, 409 to 899 steelhead, 1,536 to 3,808 cutthroat, 223 to 1,322 Dolly Varden, and 0 to 114 sturgeon. Also harvested were sockeye, pink, chum and rainbow trout.

6. Annual releases ranged from 108 to 223 chinook adults, 0 to 682 chinook jacks, 15 to 43 coho adults, 40 to 1,150 coho jacks, 108 to 757 steelhead, 101 to 1,752 cutthroat, 0 to 149 Dolly Varden, and 124 to 442 sturgeon. Also released were sockeye, pink, chum and rainbow trout.

7. Chinook and coho adult harvest rates and catchability coefficients were very low relative to other marine and tributary sport fisheries. Harvest per trip averaged 0.01 and 0.06 for chinook and coho adults, respectively.

8. The fisheries downstream (regions 1 and 2) and upstream (regions 3 and 4) of the Sumas River mouth showed unique patterns of annual angler effort and of species in the harvest. In the lower river, angling occurred through the freshet; the fishery was effective on coho adults and jacks and chinook jacks (among others). In the upper river, angling was restricted by the freshet; the fishery was effective on chinook adults and steelhead trout. Many of these differences were related to geomorphological features of the river.

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APPENDICES

Appendix 1a. Interview responses by month in Region 1 (George Massey Tunnel to Pitt River) in the 1985 lower Fraser River sport fishery.

	Sep	Oct	Nov	Total
Survey Sites a	Bro Ric	Bro Ric Tre	Bro Tre	-
Number of Interviews	232	296	127	655
Mean Angler Day Length (hr.)				
- All anglers	4.2	4.4	3.5	4.2
- Complete trip interviews				
Number	210	223	71	504
Hours	4.0	4.3	2.9	4.0
- Incomplete trip interviews				
Number	22	67	56	145
Hours	6.1	4.7	4.3	4.7
Mean number of anglers per party	1.7	1.7	1.8	1.7
Target Species				
- Coho	76	208	111	395
- Coho jack	4	4	0	8
- Cutthroat	2	0	0	2
- Dolly Varden	1	0	0	1
- Sturgeon	4	0	0	4
- Anything	145	84	16	245
Harvested Catch				
- Chinook jack	1	0	0	1
- Coho	9	28	0	37
- Coho jack	16	139	16	171
- Pink	6	0	0	6
- Cutthroat	10	3	0	13
- Dolly Varden	3	2	1	6
Released Catch				
- Coho jack	1	0	0	1
- Pink	1	0	0	1
- Steelhead	1	0	0	1
- Cutthroat	2	0	0	2
- Sturgeon	0	1	0	1
Inspection of Catch				
- Number	30	80	5	115
- Number correct	30	80	5	115
Gear				
- Bait	232	293	126	651
- Lure	0	1	1	2
- Bait/Lure	0	0	0	0
- Fly	0	2	0	2

a. Survey sites: Bro - Brownsville Bar
Ric - Richmond Dump Bar
Tre - Tree Island Bar

Appendix 1b. Interview responses by month in Region 2 (Pitt River to Sumas River) in the 1985 lower Fraser River sport fishery.

	Sep	Oct	Nov	Total
Survey Sites a	Dun Edg Sta	Dun Edg Sta	Dun Edg Sta	-
Number of Interviews	838	1,244	634	2,716
Mean Angler Day Length (hr.)				
- All anglers	5.7	6.2	5.2	5.8
- Complete trip interviews				
Number	462	656	367	1,485
Hours	4.5	5.2	4.3	4.7
- Incomplete trip interviews				
Number	376	588	267	1,231
Hours	7.0	7.3	6.6	7.1
Mean number of anglers per party	1.9	2.0	1.9	1.9
Target Species				
- Chinook	5	0	0	5
- Chinook jack	1	0	0	1
- Coho	385	783	481	1,649
- Coho jack	12	4	0	16
- Sockeye	1	0	0	1
- Pink	2	0	0	2
- Chum	3	0	0	3
- Steelhead	2	6	3	11
- Cutthroat	2	1	0	3
- Anything	424	450	150	1,024
Harvested Catch				
- Chinook	2	0	0	2
- Chinook jack	3	7	0	10
- Coho	19	72	37	128
- Coho jack	14	274	104	392
- Chum	1	2	0	3
- Pink	0	2	0	2
- Steelhead	1	5	0	6
- Cutthroat	32	48	13	93
- Dolly Varden	0	3	0	3
Released Catch				
- Chinook	3	1	0	4
- Coho	1	0	0	1
- Coho jack	6	0	0	6
- Chum	35	7	0	42
- Pink	1	4	0	5
- Steelhead	1	0	0	1
- Cutthroat	8	3	1	12
- Sturgeon	4	0	1	5
- Unknown	14	6	1	21

Continued

Appendix 1b. Interview responses by month in Region 2 (Pitt River to Sumas River) in the 1985 lower Fraser River sport fishery, continued.

	Sep	Oct	Nov	Total
Inspection of Catch				
- Number	64	389	125	578
- Number correct	64	389	125	578
Gear				
- Bait	824	1,237	621	2,682
- Lure	11	3	7	21
- Bait/Lure	2	4	6	12
- Fly	0	0	0	0

a. Survey sites: Dun - Duncan Bar
Edg - Edgewater Bar
Sts - Standard Gas Bar

Appendix Ic. Interview responses by month in Region 3 (Sumas River to Harrison River) in the 1985 lower Fraser River sport fishery.

	Sep	Oct	Nov	Total
Survey Sites a	Bow Eng Hep Win	Bow Eng Win	Eng Gra Win	-
Number of Interviews	914	732	302	1,948
Mean Angler Day Length (hr.)				
- All anglers	8.8	6.0	4.7	7.1
- Complete trip interviews				
Number	378	413	197	988
Hours	6.6	4.7	4.0	5.3
- Incomplete trip interviews				
Number	536	319	105	960
Hours	10.4	7.9	5.8	9.1
Mean number of anglers per party	2.5	1.7	1.5	2.0
Target Species				
- Chinook	30	7	0	37
- Chinook jack	2	0	0	2
- Coho	55	33	32	120
- Coho jack	21	0	0	21
- Steelhead	151	311	64	526
- Cutthroat	1	0	3	4
- Anything	653	381	202	1,236
Harvested Catch				
- Chinook	8	18	0	26
- Chinook jack	27	19	1	47
- Coho	14	17	3	34
- Coho jack	8	12	1	21
- Pink	1	0	0	1
- Steelhead	5	28	9	42
- Cutthroat	0	3	1	4
Released Catch				
- Chinook	0	4	0	4
- Chum	2	6	4	12
- Pink	101	144	1	246
- Steelhead	1	1	1	3
- Cutthroat	1	0	0	1
- Sturgeon	1	0	0	1
Inspection of Catch				
- Number	39	79	10	128
- Number correct	39	79	10	128

Continued

Appendix 1c. Interview responses by month in Region 3 (Sumas River to Harrison River) in the 1985 lower Fraser River sport fishery, continued.

	Sep	Oct	Nov	Total
Gear				
- Bait	39	4	8	51
- Lure	797	658	271	1,726
- Bait/Lure	78	70	23	171
- Fly	0	0	0	0

a. Survey sites are: Bow - Bowman's Bar
Eng - Englebrich Bar
Gra - Grassy Bank Bar
Hep - Hepner's Bar
Win - Wing Dam

Appendix Id. Interview responses by month in Region 4 (Harrison River to Coquihalla River) in the 1985 lower Fraser River sport fishery. a

	Sep	Oct	Nov	Total
Survey Sites b	Fer Mor	Fer	Fer	-
Number of Interviews	195	162	42	399
Mean Angler Day Length (hr.)				
- All anglers	5.8	5.3	4.0	5.4
- Complete trip interviews				
Number	129	100	24	253
Hours	5.1	4.9	3.2	4.9
- Incomplete trip interviews				
Number	66	62	18	146
Hours	7.4	7.0	5.0	7.0
Mean number of anglers per party	1.6	2.0	1.6	1.7
Target Species				
- Chinook	12	8	0	20
- Chinook jack	0	8	0	8
- Coho	12	15	12	39
- Coho jack	4	0	0	4
- Steelhead	70	32	10	112
- Cutthroat	2	0	0	2
- Anything	95	99	20	214
Harvested Catch				
- Chinook jack	2	0	0	2
- Coho	1	0	1	2
- Coho jack	1	0	0	1
- Steelhead	0	0	1	1
Released Catch				
- Pink	89	59	0	148
Inspection of Catch				
- Number	3	0	1	4
- Number correct	3	-	1	4
Gear				
- Bait	18	3	1	22
- Lure	135	140	34	309
- Bait/Lure	42	19	7	68
- Fly	0	0	0	0

a. Analysis included Englebrich Bar data.
b. Survey sites: Fer - Ferry Island Bar
Mor - Morrow's Bar

Appendix 2. Daily angler counts by region in the 1985 lower Fraser River sport fishery.

Month	Date	Day of week	Weather	Region a				Total
				1	2	3	4	
September	14-Sep	Sat	Rain	65	153	304	24	546
	15-Sep	Sun	Overcast	151	355	407	51	964
	20-Sep	Fri	Overcast	50	174	248	24	496
	21-Sep	Sat	Clear	96	368	402	66	932
	25-Sep	Wed	Clear	53	145	239	41	478
	26-Sep	Thu	Clear	56	143	194	28	421
	29-Sep	Sun	Clear	167	466	571	148	1,352
	30-Sep	Mon	Clear	79	196	272	67	614
	Weekday	Mean	-	60	165	238	40	502
		%	-	11.8%	32.8%	47.4%	8.0%	-
	Weekend	Mean	-	120	336	421	72	949
		%	-	12.6%	35.4%	44.4%	7.6%	-
October	03-Oct	Thu	Clear	104	260	376	45	785
	06-Oct	Sun	Clear	164	542	565	111	1,382
	11-Oct	Fri	Rain	106	163	251	31	551
	12-Oct	Sat	Overcast	172	397	538	79	1,186
	15-Oct	Tue	Rain	121	227	215	29	592
	19-Oct	Sat	Rain	133	294	50	3	480
	20-Oct	Sun	Rain	165	363	79	22	629
	25-Oct	Fri	Clear	172	320	59	10	561
	31-Oct	Thu	Rain	68	151	55	14	288
	Weekday	Mean	-	114	224	191	26	555
		%	-	20.6%	40.4%	34.4%	4.6%	-
	Weekend	Mean	-	159	399	308	54	920
		%	-	17.2%	43.4%	33.5%	5.8%	-
November	02-Nov	Sat	Rain	90	251	31	11	383
	04-Nov	Mon	Overcast	80	187	51	15	333
	11-Nov	Mon b	Clear	76	203	36	11	326
	19-Nov	Tue	Snow	6	7	11	6	30
	23-Nov	Sat	Clear	4	0	3	1	8
	Weekday	Mean	-	43	97	31	11	182
		%	-	23.7%	53.4%	17.1%	5.8%	-
	Weekend	Mean	-	57	151	23	8	239
		%	-	23.7%	63.3%	9.8%	3.2%	-
December	09-Dec	Mon	Clear	c	c	6	1	7
	11-Dec	Wed	Clear	7	3	15	0	25
	14-Dec	Sat	Overcast	3	5	11	4	23
	Weekday	Mean	-	7	3	11	1	21
		%	-	33.3%	14.3%	50.0%	2.4%	-
	Weekend	Mean	-	3	5	11	4	23
		%	-	13.0%	21.7%	47.8%	17.4%	-

a. Regions were: 1 - Massey Tunnel to Pitt River; 3 - Sumas River to Harrison River;
2 - Pitt River to Sumas River; 4 - Harrison River to Coquihalla River.

b. Statutory holiday.

c. Not flown due to fog.

Appendix 3a. Mean proportion of daily angler effort per hour in regions 1 (George Massey Tunnel to Pitt River) and 2 (Pitt River to Sumas River) in the 1985 lower Fraser River sport fishery.

		September		October		November	
Region	Hour	Weekday	Weekend	Weekday	Weekend	Weekday	Weekend
Region 1	2:00	0.0%	0.8%	0.0%	0.0%	0.0%	0.0%
	3:00	0.0%	1.6%	0.0%	0.0%	0.0%	0.0%
	4:00	0.0%	1.9%	0.3%	0.0%	0.0%	0.0%
	5:00	0.4%	2.3%	1.1%	1.2%	0.0%	0.5%
	6:00	1.2%	4.6%	2.4%	3.4%	0.1%	1.6%
	7:00	3.9%	7.8%	4.2%	5.3%	6.8%	2.3%
	8:00	6.4%	10.0%	6.0%	6.6%	9.8%	3.8%
	9:00	9.0%	10.6%	7.4%	9.0%	8.0%	13.0%
	10:00	9.8%	10.1%	9.4%	8.5%	10.3%	13.0%
	11:00	10.8%	6.3%	9.8%	9.2%	10.0%	14.0%
	12:00	9.8%	6.5%	10.4%	9.8%	8.2%	10.7%
	13:00	8.5%	7.3%	10.1%	9.0%	6.5%	11.9%
	14:00	8.3%	7.8%	9.1%	8.4%	7.6%	11.3%
	15:00	7.3%	7.4%	8.0%	8.0%	6.3%	11.9%
	16:00	6.6%	5.9%	7.1%	6.4%	12.7%	3.5%
	17:00	6.8%	2.7%	6.3%	7.0%	9.5%	2.1%
	18:00	5.7%	2.5%	4.7%	5.1%	3.6%	0.5%
	19:00	4.5%	2.5%	3.5%	2.8%	0.5%	0.0%
	20:00	1.0%	1.2%	0.1%	0.4%	0.0%	0.0%
	21:00	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
	22:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	23:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	24:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Region 2	2:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	3:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	4:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	5:00	0.1%	0.1%	0.0%	0.1%	0.0%	0.0%
	6:00	0.8%	0.9%	0.5%	0.8%	0.0%	0.7%
	7:00	2.5%	3.5%	1.7%	2.1%	1.7%	4.4%
	8:00	4.3%	6.5%	5.6%	5.8%	6.1%	8.8%
	9:00	6.4%	8.1%	7.8%	8.5%	9.2%	9.7%
	10:00	9.1%	10.2%	10.9%	10.0%	10.2%	11.8%
	11:00	10.8%	10.2%	11.3%	11.7%	13.2%	12.5%
	12:00	10.6%	8.0%	12.2%	11.5%	13.6%	13.7%
	13:00	10.9%	9.1%	11.8%	10.9%	14.3%	12.6%
	14:00	10.5%	10.3%	11.1%	10.1%	13.3%	11.5%
	15:00	9.7%	9.9%	10.0%	9.4%	12.3%	9.4%
	16:00	6.9%	7.9%	6.6%	8.0%	5.3%	3.7%
	17:00	5.9%	5.5%	5.0%	5.6%	0.4%	0.8%
	18:00	5.1%	5.1%	4.2%	4.4%	0.1%	0.2%
	19:00	4.0%	3.0%	0.9%	1.0%	0.0%	0.0%
	20:00	1.7%	1.4%	0.2%	0.2%	0.0%	0.0%
	21:00	0.5%	0.3%	0.0%	0.0%	0.0%	0.0%
	22:00	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
	23:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	24:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Appendix 3b. Mean proportion of daily angler effort per hour in regions 3 (Sumas River to Harrison River) and 4 (Harrison River to Coquihalla River) in the 1985 lower Fraser River sport fishery.

		September		October		November	
Region	Hour	Weekday	Weekend	Weekday	Weekend	Weekday	Weekend
Region 3	2:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	3:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	4:00	0.1%	0.0%	0.1%	0.2%	0.0%	0.0%
	5:00	0.5%	0.2%	0.6%	0.9%	0.0%	0.0%
	6:00	2.5%	1.7%	2.0%	3.5%	0.2%	0.7%
	7:00	4.9%	3.8%	4.2%	7.0%	1.8%	3.7%
	8:00	6.6%	5.3%	7.3%	8.6%	3.9%	9.9%
	9:00	8.1%	6.8%	8.8%	10.9%	7.2%	10.9%
	10:00	8.7%	8.1%	9.5%	11.6%	9.9%	11.5%
	11:00	9.2%	8.8%	9.4%	9.8%	12.3%	12.0%
	12:00	7.9%	8.7%	9.4%	9.7%	13.3%	11.5%
	13:00	8.1%	8.5%	8.9%	8.9%	12.6%	10.1%
	14:00	8.2%	8.3%	8.4%	8.4%	11.9%	10.5%
	15:00	7.9%	8.3%	7.6%	7.6%	11.3%	8.9%
	16:00	6.5%	8.0%	7.7%	5.0%	9.6%	6.1%
	17:00	5.7%	7.2%	5.8%	4.0%	5.6%	3.2%
	18:00	5.4%	6.0%	5.3%	2.5%	0.4%	1.0%
	19:00	5.1%	5.4%	4.0%	1.1%	0.0%	0.0%
	20:00	3.6%	4.2%	1.0%	0.2%	0.0%	0.0%
	21:00	0.7%	0.5%	0.1%	0.0%	0.0%	0.0%
	22:00	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
	23:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	24:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Region 4	2:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	3:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	4:00	0.0%	0.0%	0.2%	0.4%	0.0%	0.0%
	5:00	0.3%	0.2%	0.7%	1.8%	0.0%	0.0%
	6:00	2.0%	2.4%	1.8%	5.0%	0.0%	0.0%
	7:00	4.5%	6.0%	3.5%	7.9%	0.0%	0.0%
	8:00	6.9%	8.3%	5.7%	9.2%	2.7%	5.0%
	9:00	8.8%	9.3%	6.8%	9.9%	3.8%	7.0%
	10:00	9.3%	10.1%	7.5%	10.2%	8.2%	8.6%
	11:00	9.6%	11.3%	9.3%	8.3%	12.6%	14.9%
	12:00	8.2%	8.4%	9.6%	8.2%	14.8%	15.4%
	13:00	8.9%	8.4%	9.4%	7.8%	14.7%	14.7%
	14:00	9.3%	8.2%	8.5%	7.8%	14.4%	15.6%
	15:00	8.2%	8.1%	7.6%	7.2%	13.1%	14.3%
	16:00	7.6%	7.0%	9.2%	5.9%	9.4%	2.9%
	17:00	5.1%	5.2%	7.5%	4.7%	5.8%	1.5%
	18:00	4.0%	2.9%	6.6%	3.1%	0.5%	0.0%
	19:00	3.6%	2.1%	4.9%	2.2%	0.0%	0.0%
	20:00	2.9%	1.6%	1.2%	0.5%	0.0%	0.0%
	21:00	0.8%	0.3%	0.0%	0.0%	0.0%	0.0%
	22:00	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
	23:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	24:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Appendix 4a. Mean monthly harvest and release, by species, per angler hour in Region 1 (George Massey Tunnel to Pitt River) in the 1985 lower Fraser River sport fishery.

		Catch per unit effort								
		Chinook		Coho						
	Month	Adult	Jack	Adult	Jack	Pink	Steel-head	Cut-throat	Dolly Varden	Sturgeon
Harvest	Sep	0.0000	0.0006	0.0107	0.0174	0.0075	0.0000	0.0072	0.0031	0.0000
	Oct	0.0000	0.0000	0.0235	0.1067	0.0000	0.0000	0.0052	0.0011	0.0000
	Nov	0.0000	0.0000	0.0000	0.0362	0.0000	0.0000	0.0000	0.0020	0.0000
Release	Sep	0.0000	0.0000	0.0000	0.0011	0.0023	0.0006	0.0011	0.0000	0.0000
	Oct	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0010
	Nov	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	Sep	0.0000	0.0006	0.0107	0.0185	0.0098	0.0006	0.0082	0.0031	0.0000
	Oct	0.0000	0.0000	0.0235	0.1067	0.0000	0.0000	0.0052	0.0011	0.0010
	Nov	0.0000	0.0000	0.0000	0.0362	0.0000	0.0000	0.0000	0.0020	0.0000

Appendix 4b. Mean monthly harvest and release, by species, per angler hour in Region 2 (Pitt River to Sumas River) in the 1985 lower Fraser River sport fishery.

		Catch per unit effort									
		Chinook		Coho							
	Month	Adult	Jack	Adult	Jack	Pink	Chum	Steel-head	Cut-throat	Dolly Varden	Sturgeon
Harvest	Sep	0.0005	0.0008	0.0045	0.0042	0.0000	0.0002	0.0002	0.0103	0.0000	0.0000
	Oct	0.0000	0.0012	0.0115	0.0393	0.0005	0.0001	0.0008	0.0114	0.0006	0.0000
	Nov	0.0000	0.0000	0.0145	0.0375	0.0000	0.0000	0.0000	0.0040	0.0000	0.0000
Release	Sep	0.0009	0.0000	0.0002	0.0011	0.0001	0.0073	0.0002	0.0018	0.0000	0.0009
	Oct	0.0001	0.0000	0.0000	0.0000	0.0005	0.0009	0.0000	0.0019	0.0000	0.0000
	Nov	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000	0.0002
Total	Sep	0.0015	0.0008	0.0047	0.0053	0.0001	0.0075	0.0005	0.0122	0.0000	0.0009
	Oct	0.0001	0.0012	0.0115	0.0393	0.0011	0.0011	0.0008	0.0133	0.0006	0.0000
	Nov	0.0000	0.0000	0.0145	0.0375	0.0000	0.0000	0.0000	0.0042	0.0000	0.0002

Appendix 4c. Mean monthly harvest and release, by species, per angler hour in Region 3 (Sumas River to Harrison River) in the 1985 lower Fraser River sport fishery.

		Catch per unit effort								
		Chinook		Coho						
	Month	Adult	Jack	Adult	Jack	Pink	Chum	Steel-head	Cut-throat	Stur-geon
Harvest	Sep	0.0015	0.0049	0.0032	0.0016	0.0004	0.0000	0.0010	0.0000	0.0000
	Oct	0.0052	0.0033	0.0017	0.0018	0.0000	0.0000	0.0070	0.0008	0.0000
	Nov	0.0000	0.0011	0.0015	0.0004	0.0000	0.0000	0.0068	0.0006	0.0000
Release	Sep	0.0000	0.0000	0.0000	0.0000	0.0182	0.0006	0.0001	0.0001	0.0001
	Oct	0.0008	0.0000	0.0000	0.0000	0.0331	0.0021	0.0008	0.0000	0.0000
	Nov	0.0000	0.0000	0.0000	0.0000	0.0006	0.0024	0.0006	0.0000	0.0000
Total	Sep	0.0015	0.0049	0.0032	0.0016	0.0186	0.0006	0.0010	0.0001	0.0001
	Oct	0.0061	0.0033	0.0017	0.0018	0.0331	0.0021	0.0078	0.0008	0.0000
	Nov	0.0000	0.0011	0.0015	0.0004	0.0006	0.0024	0.0074	0.0006	0.0000

Appendix 4d. Mean monthly harvest and release, by species, per angler hour in Region 4 (Harrison River to Coquihalla River) in the 1985 lower Fraser River sport fishery.

		Catch per unit effort								
		Chinook		Coho						
	Month	Adult	Jack	Adult	Jack	Pink	Chum	Steel-head	Cut-throat	Stur-geon
Harvest	Sep	0.0000	0.0006	0.0012	0.0018	0.0000	0.0000	0.0007	0.0000	0.0000
	Oct	0.0003	0.0002	0.0010	0.0003	0.0000	0.0000	0.0087	0.0000	0.0000
	Nov	0.0000	0.0000	0.0025	0.0000	0.0000	0.0000	0.0044	0.0000	0.0000
Release	Sep	0.0000	0.0000	0.0000	0.0000	0.0441	0.0000	0.0000	0.0003	0.0003
	Oct	0.0000	0.0000	0.0000	0.0000	0.0649	0.0000	0.0000	0.0000	0.0000
	Nov	0.0000	0.0000	0.0000	0.0000	0.0010	0.0049	0.0010	0.0000	0.0000
Total	Sep	0.0000	0.0006	0.0012	0.0018	0.0441	0.0000	0.0007	0.0003	0.0003
	Oct	0.0003	0.0002	0.0010	0.0003	0.0649	0.0000	0.0087	0.0000	0.0000
	Nov	0.0000	0.0000	0.0025	0.0000	0.0010	0.0049	0.0054	0.0000	0.0000

Appendix 5a. Interview responses by month in Region 1 (Strait of Georgia to Pitt River) in the 1986 lower Fraser River sport fishery.

	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Survey Sites a	Bro Riv	Bro Riv	Bro Ric	Bro Ric	Bro Riv	Bro Riv Tre	Bro Riv Tre	Bro Byr	-
Number of Interviews	209	390	708	687	425	353	120	18	2,910
Mean Angler Day Length (hr.)									
- All anglers	3.5	4.2	4.5	4.4	4.0	5.4	5.1	4.2	4.4
- Complete trip interviews									
Number	126	212	416	433	341	247	106	16	1,897
Hours	3.2	4.1	4.4	4.3	3.9	5.0	5.1	4.3	4.3
- Incomplete trip interviews									
Number	83	178	292	254	84	106	14	2	1,013
Hours	3.9	4.3	4.6	4.5	4.4	6.4	5.9	3.0	4.7
Mean number of anglers per party	1.6	1.6	1.5	1.6	1.4	1.6	1.3	1.3	1.5
Target Species									
- Chinook jack	3	7	0	0	0	0	0	0	10
- Coho	0	0	0	0	0	1	0	0	1
- Steelhead	5	0	0	0	0	0	0	0	5
- Sturgeon	4	2	0	0	0	0	0	0	6
- Anything	197	381	708	687	425	352	120	18	2,888
Harvested Catch									
- Chinook jack	0	13	45	104	17	11	0	0	190
- Coho	0	0	0	0	13	22	8	0	43
- Coho jack	0	0	0	0	24	74	34	0	132
- Chum	0	0	0	0	0	3	0	0	3
- Steelhead	1	10	1	0	0	0	0	0	12
- Rainbow	1	1	0	0	4	0	0	0	6
- Cutthroat	0	0	0	2	2	1	0	0	5
- Dolly Varden	2	8	9	1	3	12	0	0	35
Released Catch									
- Chinook	2	0	0	0	0	0	0	0	2
- Chinook jack	0	0	1	1	0	0	0	0	2
- Coho	0	0	0	0	1	0	0	0	1
- Coho jack	0	0	0	0	1	11	1	0	13
- Steelhead	1	1	0	0	0	0	0	0	2
- Rainbow	0	0	1	0	0	0	0	0	1
- Cutthroat	2	0	1	0	0	0	0	0	3
- Dolly Varden	0	1	0	0	0	0	2	0	3
- Sturgeon	0	6	6	0	0	0	0	0	12
Inspection of Catch									
- Number	3	25	43	66	32	17	0	0	186
- Number correct	3	24	43	66	32	17	0	0	185

Continued

Appendix 5a. Interview responses by month in Region 1 (Strait of Georgia to Pitt River) in the 1986 lower Fraser River sport fishery, continued.

	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Gear									
- Bait	208	389	706	686	420	350	120	18	2,897
- Lure	0	0	1	1	3	3	0	0	8
- Bait/Lure	1	1	1	0	2	0	0	0	5
- Fly	0	0	0	0	0	0	0	0	0
In B.C. for Expo-86	0	7	5	10	0	0	0	0	22

a. Survey sites: Bro - Brownsville Bar
Byr - Byrne Road Bar
Ric - Richmond Dump Bar
Riv - River Road Bar
Tre - Tree Island Bar

Appendix 5b. Interview responses by month in Region 2 (Pitt River to Sumas River) in the 1986 lower Fraser River sport fishery.

	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Survey Sites a	Dun Edg Pop Sta	Dun Edg Sta	Dun Edg Sta	Dun Edg Sta	Dun Edg Sta	Dun Edg Sta	Dun Edg Rid Sta Two	Dew Dun Edg Rid Sta	-
Number of Interviews	694	1,031	2,135	2,150	1,501	1,968	586	136	10,201
Mean Angler Day Length (hr.)									
- All anglers	6.3	6.0	7.3	7.8	5.9	6.3	4.8	2.1	6.6
- Complete trip interviews									
Number	374	604	903	790	864	1,013	383	86	5,017
Hours	5.0	4.9	5.8	5.3	4.7	5.1	3.9	2.0	5.0
- Incomplete trip interviews									
Number	320	427	1,232	1,360	637	955	203	50	5,184
Hours	7.9	7.5	8.3	9.3	7.1	7.6	6.6	2.2	8.1
Mean number of anglers per party	1.8	1.9	2.0	1.4	2.0	2.3	1.6	0.9	1.9
Target Species									
- Chinook	0	0	0	1	0	0	0	0	1
- Chinook jack	1	0	0	1	0	0	0	0	2
- Coho	0	0	0	139	365	1,407	389	2	2,302
- Coho jack	0	0	0	4	0	0	0	0	4
- Sockeye	0	0	0	0	1	2	0	0	3
- Steelhead	6	5	0	0	0	0	0	21	32
- Rainbow	1	0	0	0	0	0	0	0	1
- Cutthroat	15	0	0	0	1	0	0	0	16
- Sturgeon	8	55	73	34	1	0	0	6	177
- Anything	663	971	2,062	1,971	1,133	559	197	107	7,663
Harvested Catch									
- Chinook	0	1	1	2	1	3	0	0	8
- Chinook jack	4	22	268	120	13	7	0	0	434
- Coho	0	0	0	0	10	69	43	8	130
- Coho jack	0	0	2	12	20	207	92	10	343
- Chum	0	0	0	0	2	1	0	1	4
- Steelhead	8	2	9	0	0	0	0	0	19
- Rainbow	0	0	0	0	5	2	1	4	12
- Cutthroat	13	0	0	21	70	50	15	3	172
- Dolly Varden	1	8	7	6	0	5	1	1	29
- Sturgeon	0	2	2	3	1	0	0	0	8
Released Catch									
- Chinook	0	1	1	2	0	0	0	0	4
- Chinook jack	0	0	1	0	1	0	0	0	2
- Coho	0	0	0	0	0	2	1	0	3
- Coho jack	0	0	0	0	0	2	0	1	3
- Chum	0	0	0	0	9	0	0	1	10
- Pink	0	0	0	0	1	0	0	0	1
- Steelhead	1	0	1	3	1	0	0	0	6

Continued

Appendix 5b. Interview responses by month in Region 2 (Pitt River to Sumas River) in the 1986 lower Fraser River sport fishery, continued.

	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Released Catch Cont'd									
- Cutthroat	4	3	0	1	11	11	0	1	31
- Dolly Varden	1	0	0	0	0	0	0	0	1
- Sturgeon	1	17	6	3	4	0	0	0	31
- Unknown	3	1	1	22	11	17	0	1	56
Inspection of Catch									
- Number	18	22	226	71	23	134	80	17	591
- Number correct	18	22	226	71	23	134	80	17	591
Gear									
- Bait	681	973	2,135	2,127	1,490	1,965	586	90	10,047
- Lure	1	5	0	5	0	2	0	46	59
- Bait/Lure	12	19	0	18	11	1	0	0	61
- Fly	0	0	0	0	0	0	0	0	0
In B.C. for Expo-86	8	11	14	8	1	0	0	0	42

a. Survey sites: Dew - Dewdney Bar
Dun - Duncan Bar
Edg - Edgewater Bar
Pop - Poplar Bar
Rid - Ridgedale Bar
Sta - Standard Gas Bar
Two - Two Bit Bar

Appendix 5c. Interview responses by month in Region 3 (Sumas River to Harrison River) in the 1986 lower Fraser River sport fishery.

	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Survey Sites a	Eng Win	Eng	Eng	Eng Win	Bow Eng Win	Bow Eng Win	Bow Eng Gra Win	Eng Gra Que	-
Number of Interviews	31	4	179	384	2,482	1,445	181	60	4,766
Mean Angler Day Length (hr.)									
- All anglers	4.6	4.0	6.0	7.4	7.3	8.3	5.3	4.6	7.4
- Complete trip interviews									
Number	25	3	168	191	1,281	616	112	48	2,444
Hours	4.8	4.0	6.1	4.9	5.9	6.2	3.9	4.3	5.8
- Incomplete trip interviews									
Number	6	1	11	193	1,201	829	69	12	2,322
Hours	3.0	4.0	4.8	9.9	8.8	9.7	7.6	5.2	9.1
Mean number of anglers per party	1.2	1.0	1.9	2.2	2.2	2.4	1.8	1.9	2.2
Target Species									
- Chinook	1	3	0	5	1	0	0	0	10
- Chinook jack	0	0	0	43	39	0	0	0	82
- Coho	0	0	12	3	0	0	0	0	15
- Coho jack	0	0	0	6	0	0	0	0	6
- Steelhead	0	0	0	8	101	1	0	0	110
- Sturgeon	2	0	0	2	0	0	0	0	4
- Anything	28	1	167	317	2,341	1,444	181	60	4,539
Harvested Catch									
- Chinook	0	0	0	1	70	56	0	0	127
- Chinook jack	0	0	10	26	474	63	0	0	573
- Coho	0	0	0	0	56	126	41	9	232
- Coho jack	0	0	0	0	65	17	3	0	85
- Chum	0	0	0	0	0	0	1	0	1
- Steelhead	0	0	1	0	31	17	0	0	49
- Cutthroat	1	0	0	0	4	1	7	6	19
- Dolly Varden	0	0	0	0	1	2	0	2	5
- Sturgeon	0	0	0	0	2	0	0	0	2
Released Catch									
- Chinook	2	0	9	2	0	2	0	0	15
- Chinook jack	0	0	0	1	5	1	0	0	7
- Coho	0	0	0	0	2	0	0	0	2
- Coho jack	0	0	0	0	1	1	0	0	2
- Sockeye	0	0	0	1	3	1	0	0	5
- Chum	0	0	0	0	0	41	6	0	47
- Steelhead	1	0	0	0	3	107	3	0	114
- Cutthroat	0	0	0	0	0	0	2	2	4
- Unknown	0	0	0	1	0	0	0	0	1

Continued

Appendix 5c. Interview responses by month in Region 3 (Sumas River to Harrison River) in the 1986 lower Fraser River sport fishery, continued.

	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Inspection of Catch									
- Number	3	0	7	11	383	182	39	5	630
- Number correct	3	0	7	11	383	182	39	5	630
Gear									
- Bait	13	4	157	51	308	27	16	10	586
- Lure	16	0	6	161	1,264	1,060	132	47	2,686
- Bait/Lure	2	0	16	172	909	357	33	3	1,492
- Fly	0	0	0	0	0	0	0	0	0
In B.C. for Expo-86	0	0	0	0	0	1	0	0	1

a. Survey sites: Bow - Bowman's Bar
Eng - Englebrich's Bar
Gra - Grassy Bank Bar
Que - Queen's Island Bar
Win - Wing Dam Bar

Appendix 5d. Summary of interview responses by month in Region 4 (Harrison River to Coquihalla River) in the 1986 lower Fraser River sport fishery. a

	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Survey Sites b	-	-	-	Fer	Fer	Fer	Fer	Fer	-
Number of Interviews	0	0	0	48	86	86	18	6	244
Mean Angler Day Length (hr.)									
- All anglers	-	-	-	5.1	4.6	6.3	2.3	1.0	5.0
- Complete trip interviews									
Number	0	0	0	37	65	39	11	6	158
Hours	-	-	-	5.3	4.4	3.8	2.0	1.0	4.2
- Incomplete trip interviews									
Number	0	0	0	11	21	47	7	-	86
Hours	-	-	-	4.5	5.4	8.4	2.9	-	6.7
Mean number of anglers per party	-	-	-	1.5	1.4	3.4	1.4	1.7	2.1
Target Species									
- Chinook	0	0	0	0	4	0	0	0	4
- Chinook jack	0	0	0	15	22	0	0	0	37
- Coho jack	0	0	0	1	0	0	0	0	1
- Steelhead	0	0	0	3	4	0	0	0	7
- Anything	0	0	0	29	56	86	18	6	195
Harvested Catch									
- Chinook jack	0	0	0	3	3	0	0	0	6
- Coho	0	0	0	0	2	1	0	0	3
- Steelhead	0	0	0	0	1	0	0	0	1
- Dolly Varden	0	0	0	1	1	0	0	0	2
Released Catch									
- Chum	0	0	0	0	0	1	0	0	1
- Steelhead	0	0	0	0	0	4	0	0	4
Inspection of Catch									
- Number	0	0	0	4	3	1	0	0	8
- Number correct	-	-	-	4	3	1	-	-	8
Gear									
- Bait	0	0	0	7	6	5	1	6	25
- Lure	0	0	0	25	52	47	10	0	134
- Bait/Lure	0	0	0	16	28	34	7	0	85
- Fly	0	0	0	0	0	0	0	0	0
In B.C. for Expo-86	0	0	0	0	0	0	0	0	0

a. Upper boundary moved to the top of Waleach Slough on September 1; analysis included Englebrich Bar data.

b. Survey site: Fer - Ferry Island Bar.

Appendix 6. Daily angler counts by region in the 1986 lower Fraser River sport fishery.

Month	Date	Day of week	Weather	Region a				Total
				1	2	3	4	
April	26-Apr	Sun	Rain	10	21	10	0	41
May	14-May	Wed	Overcast	9	27	4	1	41
	17-May	Sat	Rain	9	62	12	4	87
	25-May	Sun	Overcast	13	102	12	8	135
	29-May	Thu	Clear	30	49	2	0	81
	Weekday	Mean	-	20	38	3	1	62
		%	-	31.5%	61.3%	4.8%	0.8%	-
	Weekend	Mean	-	11	82	12	6	111
		%	-	9.9%	73.9%	10.8%	5.4%	-
June	02-Jun	Mon	Clear	9	23	0	0	32
	07-Jun	Sat	Overcast	30	46	1	0	77
	11-Jun	Wed	Clear	27	33	1	3	64
	15-Jun	Sun	Rain	45	91	9	16	161
	17-Jun	Tue	Rain	40	29	0	5	74
	22-Jun	Sun	Clear/Rain	79	135	2	17	233
	27-Jun	Fri	Clear	38	83	2	3	126
	28-Jun	Sat	Overcast	60	99	16	10	185
	Weekday	Mean	-	29	42	1	3	74
		%	-	38.5%	56.8%	1.0%	3.7%	-
	Weekend	Mean	-	54	93	7	11	164
		%	-	32.6%	56.6%	4.3%	6.6%	-
July	01-Jul	Tue b	Rain	39	93	14	8	154
	04-Jul	Fri	Overcast	46	118	11	5	180
	06-Jul	Sun	Clear	108	204	36	16	364
	09-Jul	Wed	Overcast	42	97	13	0	152
	12-Jul	Sat	Overcast	65	174	30	15	284
	14-Jul	Mon	Rain	55	92	23	3	173
	20-Jul	Sun	Clear	100	223	63	24	410
	24-Jul	Thu	Overcast	36	102	22	3	163
	26-Jul	Sat	Overcast	62	199	48	8	317
	29-Jul	Tue	Clear	54	113	21	16	204
	Weekday	Mean	-	47	104	18	5	174
		%	-	26.7%	59.9%	10.3%	3.1%	-
	Weekend	Mean	-	75	179	38	14	306
		%	-	24.5%	58.4%	12.5%	4.6%	-
August	04-Aug	Mon b	Clear	130	280	101	33	544
	07-Aug	Thu	Clear	40	102	29	9	180
	09-Aug	Sat	Clear	94	211	57	15	377
	11-Aug	Mon	Overcast	76	106	52	14	248
	13-Aug	Wed	Clear	53	160	54	18	285
	17-Aug	Sun	Clear	132	268	122	23	545
	23-Aug	Sat	Clear	71	233	112	39	455

Continued

Appendix 6. Daily angler counts by region in the 1986 lower Fraser River sport fishery, continued.

Month	Date	Day of week	Weather	Region a				Total
				1	2	3	4	
	26-Aug	Tue	Clear	37	120	63	1	221
	29-Aug	Fri	Overcast	36	173	139	18	366
	31-Aug	Sun	Overcast	135	442	295	83	955
	Weekday	Mean	-	48	132	67	12	260
		%	-	18.6%	50.8%	25.9%	4.6%	-
	Weekend	Mean	-	112	287	137	39	575
		%	-	19.5%	49.9%	23.9%	6.7%	-
September	01-Sep	Mon b	Overcast	141	417	258	56	872
	05-Sep	Fri	Clear	47	78	124	10	259
	07-Sep	Sun	Clear	154	403	271	39	867
	11-Sep	Thu	Overcast	48	119	111	7	285
	13-Sep	Sat	Overcast	101	281	321	10	713
	17-Sep	Wed	Overcast	58	124	160	18	360
	21-Sep	Sun	Overcast	173	565	476	102	1,316
	24-Sep	Wed	Overcast	102	148	248	19	517
	27-Sep	Sat	Rain	148	193	339	35	715
	29-Sep	Mon	Overcast	87	139	206	20	452
	Weekday	Mean	-	68	122	170	15	375
		%	-	18.3%	32.5%	45.3%	4.0%	-
	Weekend	Mean	-	143	372	333	48	897
		%	-	16.0%	41.5%	37.1%	5.4%	-
October	03-Oct	Fri	Overcast	105	215	219	29	568
	05-Oct	Sun	Clear	223	676	411	76	1,386
	08-Oct	Wed	Overcast	144	202	190	29	565
	11-Oct	Sat	Clear	232	466	337	21	1,056
	13-Oct	Mon b	Clear	338	612	323	48	1,321
	14-Oct	Tue	Clear	147	286	111	13	557
	19-Oct	Sun	Clear	381	772	303	38	1,494
	20-Oct	Mon	Clear	194	362	139	27	722
	26-Oct	Sat	Overcast	285	232	131	18	666
	30-Oct	Thu	Overcast	94	265	54	16	429
	Weekday	Mean	-	137	411	210	31	789
		%	-	17.3%	52.1%	26.7%	3.9%	-
	Weekend	Mean	-	292	552	301	40	1,185
		%	-	24.6%	46.6%	25.4%	3.4%	-
November	06-Nov	Thu	Rain	165	223	57	12	457
	08-Nov	Sat	Clear	225	155	53	1	434
	16-Nov	Sun	Rain	67	125	14	11	217
	17-Nov	Mon	Clear	44	62	37	2	145
	27-Nov	Thu	Clear	28	50	17	9	104
	29-Nov	Sat	Overcast	25	29	36	2	92
	Weekday	Mean	-	79	112	37	8	235
		%	-	33.6%	47.5%	15.7%	3.3%	-
	Weekend	Mean	-	106	103	34	5	248
		%	-	42.7%	41.6%	13.9%	1.9%	-

Continued

Appendix 6. Daily angler counts by region in the 1986 lower Fraser River sport fishery, continued.

Month	Date	Day of week	Weather	Region a				Total
				1	2	3	4	
December	08-Dec	Mon	Clear	22	11	14	0	47
	13-Dec	Sat	Rain	7	5	25	13	50

a. Regions were: 1 - Strait of Georgia to Pitt River;
2 - Pitt River to Sumas River;
3 - Sumas River to Harrison River;
4 - Harrison River to Coquihalla River (top of Waleach Slough after Aug. 31).

b. Statutory holiday.

Appendix 7a. Mean proportion of daily angler effort per hour in Region 1 (Strait of Georgia to Pitt River) in the 1986 lower Fraser River sport fishery.

Day type	Hour	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Weekday	3:00	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
	4:00	0.0%	0.0%	0.1%	0.3%	0.1%	0.2%	0.0%	0.0%
	5:00	0.0%	0.3%	0.4%	0.4%	0.2%	0.8%	0.0%	0.0%
	6:00	0.2%	1.4%	1.0%	1.9%	1.7%	3.1%	0.2%	0.0%
	7:00	0.4%	2.6%	2.3%	4.5%	3.9%	6.1%	1.1%	1.6%
	8:00	1.2%	2.8%	2.8%	6.1%	6.4%	8.5%	4.0%	3.2%
	9:00	3.3%	4.2%	4.0%	8.0%	7.9%	8.7%	9.6%	4.8%
	10:00	4.1%	4.5%	5.4%	9.3%	7.2%	10.2%	10.1%	11.3%
	11:00	8.5%	4.8%	5.9%	8.3%	8.0%	8.6%	11.8%	14.5%
	12:00	10.9%	5.4%	8.0%	8.1%	10.3%	9.1%	11.0%	17.7%
	13:00	10.3%	6.6%	7.6%	9.0%	10.6%	8.6%	11.1%	19.4%
	14:00	11.1%	8.0%	7.9%	9.3%	10.3%	8.7%	12.6%	11.3%
	15:00	10.1%	7.6%	7.3%	8.9%	7.8%	6.7%	12.4%	8.1%
	16:00	6.3%	6.5%	8.3%	6.2%	6.8%	6.5%	11.7%	8.1%
	17:00	5.8%	6.6%	6.7%	5.1%	7.2%	5.6%	3.9%	0.0%
	18:00	8.2%	7.0%	6.1%	4.2%	4.0%	5.1%	0.5%	0.0%
	19:00	8.2%	7.9%	7.2%	5.4%	4.4%	2.6%	0.0%	0.0%
	20:00	6.8%	9.5%	7.9%	4.0%	2.5%	0.6%	0.0%	0.0%
	21:00	3.5%	9.2%	7.6%	0.9%	0.5%	0.0%	0.0%	0.0%
	22:00	0.7%	4.6%	3.5%	0.0%	0.2%	0.0%	0.0%	0.0%
	23:00	0.4%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	24:00	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Weekend	2:00	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%
	3:00	0.0%	0.2%	0.2%	0.0%	0.0%	0.2%	0.0%	0.0%
	4:00	0.0%	0.9%	0.3%	0.2%	0.3%	0.4%	0.0%	0.0%
	5:00	0.1%	1.3%	0.9%	0.5%	1.0%	0.9%	0.0%	0.0%
	6:00	0.7%	2.3%	2.1%	1.7%	3.1%	2.3%	1.4%	0.0%
	7:00	1.8%	4.5%	3.4%	4.0%	7.2%	4.4%	3.8%	0.0%
	8:00	4.5%	5.9%	5.7%	6.5%	8.8%	5.0%	6.2%	0.0%
	9:00	4.3%	6.6%	7.2%	7.2%	10.8%	6.8%	13.4%	0.0%
	10:00	8.4%	5.9%	8.8%	9.4%	11.0%	6.6%	14.8%	5.3%
	11:00	9.5%	5.7%	9.1%	9.8%	10.2%	7.5%	15.2%	21.1%
	12:00	6.7%	8.0%	9.0%	8.6%	7.2%	7.0%	14.3%	24.6%
	13:00	8.4%	8.4%	8.2%	8.6%	7.6%	5.8%	12.6%	19.3%
	14:00	8.6%	9.0%	7.3%	8.4%	5.4%	7.0%	9.0%	19.3%
	15:00	10.6%	8.6%	6.7%	8.1%	7.4%	7.4%	4.2%	10.5%
	16:00	8.8%	5.7%	7.9%	6.7%	6.6%	9.2%	3.0%	0.0%
	17:00	6.5%	5.8%	6.7%	6.6%	5.0%	10.4%	2.0%	0.0%
	18:00	5.4%	5.3%	6.3%	5.0%	2.8%	7.4%	0.0%	0.0%
	19:00	5.0%	6.1%	3.4%	4.5%	3.7%	8.0%	0.0%	0.0%
	20:00	5.2%	4.3%	2.2%	3.1%	1.5%	2.6%	0.0%	0.0%
	21:00	4.3%	3.8%	2.9%	1.1%	0.2%	0.5%	0.0%	0.0%
	22:00	1.2%	1.8%	1.6%	0.0%	0.0%	0.2%	0.0%	0.0%
	23:00	0.0%	0.0%	0.1%	0.0%	0.0%	0.2%	0.0%	0.0%
	24:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%

Appendix 7b. Mean proportion of daily angler effort per hour in Region 2 (Pitt River to Sumas River) in the 1986 lower Fraser River sport fishery.

Day type	Hour	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Weekday	3:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	4:00	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
	5:00	0.3%	0.1%	0.2%	0.1%	0.1%	0.1%	0.0%	0.0%
	6:00	1.1%	0.6%	1.6%	1.2%	0.9%	0.8%	0.4%	0.0%
	7:00	2.6%	2.2%	3.7%	2.8%	2.8%	2.8%	2.5%	0.1%
	8:00	3.8%	3.4%	4.5%	3.4%	3.7%	5.6%	5.9%	3.5%
	9:00	5.0%	5.0%	5.4%	5.1%	5.5%	7.1%	8.1%	9.0%
	10:00	8.5%	6.2%	6.7%	6.4%	6.8%	9.5%	10.2%	9.6%
	11:00	11.4%	7.3%	7.2%	7.1%	8.4%	10.6%	12.2%	13.7%
	12:00	10.9%	7.8%	8.0%	7.9%	9.0%	10.9%	12.3%	16.4%
	13:00	10.9%	8.6%	7.6%	8.3%	9.4%	10.6%	12.8%	18.4%
	14:00	10.7%	8.4%	7.5%	8.4%	8.5%	10.4%	11.3%	13.5%
	15:00	8.1%	7.7%	7.5%	8.0%	7.9%	9.3%	9.7%	8.6%
	16:00	6.0%	8.1%	6.7%	8.3%	8.5%	8.4%	7.3%	6.8%
	17:00	4.9%	7.1%	6.2%	7.7%	6.7%	6.2%	6.1%	0.3%
	18:00	5.1%	6.6%	6.2%	7.1%	6.1%	5.0%	0.8%	0.0%
	19:00	4.4%	6.4%	6.4%	6.8%	6.9%	2.0%	0.2%	0.0%
	20:00	3.2%	6.4%	5.9%	5.9%	5.2%	0.5%	0.0%	0.0%
	21:00	1.7%	5.0%	5.0%	3.4%	2.4%	0.1%	0.0%	0.0%
	22:00	0.9%	2.5%	2.6%	1.4%	0.8%	0.0%	0.0%	0.0%
	23:00	0.4%	0.6%	0.9%	0.6%	0.1%	0.0%	0.0%	0.0%
	24:00	0.1%	0.1%	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%
Weekend	2:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	3:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	4:00	0.1%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%
	5:00	0.4%	0.2%	0.5%	0.2%	0.1%	0.1%	0.0%	0.0%
	6:00	1.1%	1.2%	2.1%	1.6%	1.1%	0.6%	1.4%	0.0%
	7:00	2.5%	3.5%	4.2%	3.8%	3.5%	3.7%	4.9%	1.5%
	8:00	4.2%	5.2%	5.6%	4.7%	5.9%	6.5%	8.8%	4.7%
	9:00	5.6%	6.3%	6.7%	6.1%	6.7%	7.5%	9.2%	8.8%
	10:00	6.9%	7.3%	7.6%	7.3%	8.5%	9.6%	10.5%	10.2%
	11:00	8.8%	8.1%	8.5%	8.1%	9.7%	10.6%	11.9%	14.3%
	12:00	9.4%	8.4%	8.9%	7.8%	10.2%	11.0%	11.2%	14.4%
	13:00	10.2%	9.2%	8.5%	8.3%	10.2%	11.0%	11.0%	14.1%
	14:00	10.0%	8.6%	8.4%	8.4%	9.7%	10.5%	10.4%	12.3%
	15:00	9.4%	8.1%	7.9%	8.0%	9.7%	9.4%	9.0%	10.7%
	16:00	8.9%	7.7%	6.9%	7.2%	7.4%	7.5%	8.0%	7.9%
	17:00	5.8%	7.0%	6.2%	6.7%	4.9%	5.7%	2.7%	1.2%
	18:00	4.8%	6.3%	5.4%	5.8%	4.0%	4.5%	0.9%	0.0%
	19:00	4.8%	5.5%	4.5%	5.5%	3.5%	1.2%	0.1%	0.0%
	20:00	4.0%	3.5%	3.7%	5.3%	3.4%	0.2%	0.0%	0.0%
	21:00	2.2%	2.4%	2.7%	3.2%	1.3%	0.0%	0.0%	0.0%
	22:00	0.6%	0.9%	1.1%	1.4%	0.1%	0.0%	0.0%	0.0%
	23:00	0.2%	0.5%	0.3%	0.4%	0.0%	0.0%	0.0%	0.0%
	24:00	0.0%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%

Appendix 7c. Mean proportion of daily angler effort per hour in Region 3 (Sumas River to Harrison River) in the 1986 lower Fraser River sport fishery.

Day type	Hour	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Weekday	3:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	4:00	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
	5:00	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%
	6:00	0.0%	0.0%	0.6%	0.1%	2.2%	1.1%	0.4%	0.0%
	7:00	0.0%	0.0%	1.2%	0.3%	5.2%	3.3%	3.1%	2.0%
	8:00	0.8%	0.0%	1.7%	1.6%	6.4%	6.6%	6.6%	5.6%
	9:00	1.6%	0.0%	3.7%	3.2%	8.3%	8.0%	7.9%	12.6%
	10:00	2.3%	0.0%	8.7%	4.3%	9.2%	9.1%	10.0%	14.1%
	11:00	2.3%	0.0%	9.5%	4.9%	9.8%	9.5%	11.3%	17.4%
	12:00	3.4%	0.0%	9.5%	7.9%	8.0%	9.5%	10.9%	17.4%
	13:00	7.9%	10.9%	11.6%	8.7%	8.9%	9.4%	12.2%	15.9%
	14:00	7.9%	21.7%	11.1%	8.2%	8.6%	8.8%	12.5%	8.5%
	15:00	9.4%	10.9%	10.1%	7.5%	7.7%	9.2%	10.9%	5.4%
	16:00	19.4%	28.3%	11.1%	9.4%	5.9%	8.0%	8.0%	1.0%
	17:00	17.1%	28.3%	9.1%	8.0%	4.6%	6.3%	6.2%	0.0%
	18:00	10.1%	0.0%	5.8%	8.2%	4.2%	5.3%	0.0%	0.0%
	19:00	8.6%	0.0%	2.5%	7.2%	4.2%	4.5%	0.0%	0.0%
	20:00	6.2%	0.0%	2.1%	6.7%	3.5%	1.2%	0.0%	0.0%
	21:00	1.9%	0.0%	1.2%	5.0%	1.4%	0.1%	0.0%	0.0%
	22:00	1.0%	0.0%	0.5%	3.8%	0.7%	0.0%	0.0%	0.0%
	23:00	0.0%	0.0%	0.0%	3.4%	0.7%	0.0%	0.0%	0.0%
	24:00	0.0%	0.0%	0.0%	1.7%	0.3%	0.0%	0.0%	0.0%
Weekend	2:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	3:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	4:00	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
	5:00	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%
	6:00	0.0%	0.0%	0.0%	0.1%	2.5%	0.6%	0.5%	0.9%
	7:00	0.0%	0.0%	2.2%	1.0%	5.7%	2.1%	4.2%	3.7%
	8:00	2.3%	0.0%	4.4%	2.3%	7.0%	6.1%	8.5%	6.7%
	9:00	2.3%	0.0%	5.6%	7.6%	8.2%	7.5%	10.3%	11.8%
	10:00	4.5%	0.0%	7.5%	8.8%	9.0%	8.7%	11.3%	11.8%
	11:00	9.0%	0.0%	7.8%	9.7%	9.1%	10.1%	11.7%	14.7%
	12:00	4.1%	15.4%	7.0%	8.4%	8.9%	10.7%	11.3%	14.3%
	13:00	9.9%	23.1%	13.2%	9.0%	9.3%	10.1%	10.7%	11.4%
	14:00	11.1%	23.1%	12.5%	10.3%	9.1%	9.4%	9.9%	9.7%
	15:00	14.7%	23.1%	11.0%	9.5%	8.1%	8.7%	9.1%	8.7%
	16:00	15.1%	15.4%	12.8%	6.7%	6.6%	8.8%	7.5%	6.1%
	17:00	12.8%	0.0%	8.1%	5.2%	5.2%	7.3%	4.8%	0.1%
	18:00	9.8%	0.0%	4.8%	4.6%	4.3%	5.4%	0.2%	0.0%
	19:00	4.5%	0.0%	1.9%	4.4%	3.2%	3.6%	0.0%	0.0%
	20:00	0.0%	0.0%	1.2%	4.5%	2.6%	0.8%	0.0%	0.0%
	21:00	0.0%	0.0%	0.0%	2.8%	0.7%	0.0%	0.0%	0.0%
	22:00	0.0%	0.0%	0.0%	2.0%	0.2%	0.0%	0.0%	0.0%
	23:00	0.0%	0.0%	0.0%	2.0%	0.0%	0.0%	0.0%	0.0%
	24:00	0.0%	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%

Appendix 7d. Mean proportion of daily angler effort per hour in Region 4 (Harrison River to Coquihalla River) in the 1986 lower Fraser River sport fishery. a

Day type	Hour	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Weekday	2:00	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	-
	3:00	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	-
	4:00	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	-
	5:00	0.0%	0.0%	0.0%	0.1%	0.2%	0.0%	0.0%	-
	6:00	0.0%	0.0%	0.6%	0.6%	1.3%	0.0%	0.0%	-
	7:00	0.0%	0.0%	1.2%	1.6%	3.3%	0.0%	0.0%	-
	8:00	0.0%	0.0%	1.7%	2.9%	4.9%	1.8%	0.0%	-
	9:00	0.0%	0.0%	3.7%	4.7%	7.2%	6.8%	2.3%	-
	10:00	0.0%	0.0%	8.7%	7.3%	9.4%	9.2%	6.8%	-
	11:00	0.0%	0.0%	9.5%	8.8%	10.1%	11.2%	9.1%	-
	12:00	2.9%	0.0%	9.5%	11.2%	10.0%	9.7%	10.5%	-
	13:00	8.6%	10.9%	11.6%	11.8%	10.4%	11.5%	17.3%	-
	14:00	8.6%	21.7%	11.1%	9.4%	9.8%	13.3%	21.3%	-
	15:00	11.5%	10.9%	10.1%	8.4%	8.8%	13.4%	21.9%	-
	16:00	25.2%	28.3%	11.1%	7.8%	5.8%	9.9%	9.1%	-
	17:00	21.6%	28.3%	9.1%	6.0%	4.7%	6.8%	1.7%	-
	18:00	10.8%	0.0%	5.8%	6.9%	5.0%	3.5%	0.0%	-
	19:00	7.2%	0.0%	2.5%	5.2%	4.9%	2.0%	0.0%	-
	20:00	3.6%	0.0%	2.1%	5.2%	3.1%	0.6%	0.0%	-
	21:00	0.0%	0.0%	1.2%	1.9%	0.7%	0.2%	0.0%	-
	22:00	0.0%	0.0%	0.5%	0.2%	0.1%	0.1%	0.0%	-
	23:00	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	-
	24:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-
Weekend	2:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-
	3:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-
	4:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-
	5:00	0.0%	0.0%	0.0%	0.1%	0.1%	0.3%	0.0%	-
	6:00	0.0%	0.0%	0.0%	0.2%	2.0%	0.8%	0.0%	-
	7:00	0.0%	0.0%	2.2%	0.7%	4.6%	2.1%	0.0%	-
	8:00	0.0%	0.0%	4.4%	2.1%	6.7%	4.9%	0.0%	-
	9:00	0.0%	0.0%	5.6%	7.3%	7.3%	6.2%	5.3%	-
	10:00	0.0%	0.0%	7.5%	10.3%	9.0%	8.1%	11.5%	-
	11:00	10.9%	0.0%	7.8%	12.7%	9.3%	8.8%	10.5%	-
	12:00	4.4%	15.4%	7.0%	11.1%	11.0%	10.8%	9.2%	-
	13:00	13.1%	23.1%	13.2%	10.4%	10.9%	10.7%	7.9%	-
	14:00	13.1%	23.1%	12.5%	11.9%	9.5%	10.9%	17.4%	-
	15:00	21.9%	23.1%	11.0%	9.4%	9.1%	10.4%	26.6%	-
	16:00	14.6%	15.4%	12.8%	7.5%	6.8%	10.5%	11.5%	-
	17:00	14.6%	0.0%	8.1%	5.7%	5.3%	7.0%	0.0%	-
	18:00	7.3%	0.0%	4.8%	3.1%	4.4%	5.1%	0.0%	-
	19:00	0.0%	0.0%	1.9%	2.9%	2.2%	3.2%	0.0%	-
	20:00	0.0%	0.0%	1.2%	3.3%	1.3%	0.2%	0.0%	-
	21:00	0.0%	0.0%	0.0%	1.3%	0.2%	0.0%	0.0%	-
	22:00	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	-
	23:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-

a. Upper boundary moved to the top of Waleach Slough on September 1.

Appendix 8a. Mean monthly harvest and release, by species, per angler hour in Region 1 (Strait of Georgia to Pitt River) in the 1986 lower Fraser River sport fishery.

		Catch per unit effort									
		Chinook		Coho							
	Month	Adult	Jack	Adult	Jack	Chum	Steel-head	Rain-bow	Cut-throat	Dolly Varden	Stur-geon
Harvest	May	0.0000	0.0000	0.0000	0.0000	0.0000	0.0017	0.0017	0.0000	0.0043	0.0000
	Jun	0.0000	0.0079	0.0000	0.0000	0.0000	0.0092	0.0007	0.0000	0.0051	0.0000
	Jul	0.0000	0.0143	0.0000	0.0000	0.0000	0.0005	0.0000	0.0000	0.0027	0.0000
	Aug	0.0000	0.0377	0.0000	0.0000	0.0000	0.0000	0.0000	0.0008	0.0002	0.0000
	Sep	0.0000	0.0087	0.0074	0.0098	0.0000	0.0000	0.0018	0.0009	0.0019	0.0000
	Oct	0.0000	0.0024	0.0175	0.0380	0.0016	0.0000	0.0000	0.0001	0.0074	0.0000
	Nov	0.0000	0.0000	0.0099	0.0477	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Dec	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Release	May	0.0034	0.0000	0.0000	0.0000	0.0000	0.0015	0.0000	0.0068	0.0000	0.0000
	Jun	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0005	0.0051
	Jul	0.0000	0.0005	0.0000	0.0000	0.0000	0.0000	0.0004	0.0003	0.0000	0.0027
	Aug	0.0000	0.0005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Sep	0.0000	0.0000	0.0004	0.0004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Oct	0.0000	0.0000	0.0000	0.0054	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Nov	0.0000	0.0000	0.0000	0.0042	0.0000	0.0000	0.0000	0.0000	0.0008	0.0000
	Dec	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	May	0.0034	0.0000	0.0000	0.0000	0.0000	0.0032	0.0017	0.0068	0.0043	0.0000
	Jun	0.0000	0.0079	0.0000	0.0000	0.0000	0.0093	0.0007	0.0000	0.0055	0.0051
	Jul	0.0000	0.0148	0.0000	0.0000	0.0000	0.0005	0.0004	0.0003	0.0027	0.0027
	Aug	0.0000	0.0381	0.0000	0.0000	0.0000	0.0000	0.0000	0.0008	0.0002	0.0000
	Sep	0.0000	0.0087	0.0078	0.0101	0.0000	0.0000	0.0018	0.0009	0.0019	0.0000
	Oct	0.0000	0.0024	0.0175	0.0434	0.0016	0.0000	0.0000	0.0001	0.0074	0.0000
	Nov	0.0000	0.0000	0.0099	0.0520	0.0000	0.0000	0.0000	0.0000	0.0008	0.0000
	Dec	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Appendix 8b. Mean monthly harvest and release, by species, per angler hour in Region 2 (Pitt River to Sumas River) in the 1986 lower Fraser River sport fishery.

		Catch per unit effort										
		Chinook		Coho								
	Month	Adult	Jack	Adult	Jack	Pink	Chum	Steel-head	Rain-bow	Cut-throat	Dolly Varden	Stur-geon
Harvest	May	0.0000	0.0010	0.0000	0.0000	0.0000	0.0000	0.0029	0.0000	0.0036	0.0003	0.0000
	Jun	0.0003	0.0045	0.0000	0.0000	0.0000	0.0000	0.0003	0.0000	0.0000	0.0014	0.0003
	Jul	0.0000	0.0231	0.0000	0.0002	0.0000	0.0000	0.0008	0.0000	0.0000	0.0006	0.0002
	Aug	0.0002	0.0095	0.0000	0.0010	0.0000	0.0000	0.0000	0.0000	0.0013	0.0004	0.0002
	Sep	0.0007	0.0016	0.0010	0.0037	0.0000	0.0002	0.0000	0.0013	0.0140	0.0000	0.0001
	Oct	0.0002	0.0006	0.0084	0.0280	0.0000	0.0001	0.0000	0.0001	0.0061	0.0005	0.0000
	Nov	0.0000	0.0000	0.0144	0.0415	0.0000	0.0000	0.0000	0.0008	0.0043	0.0005	0.0000
	Dec	0.0000	0.0000	0.0202	0.0432	0.0000	0.0039	0.0000	0.0157	0.0050	0.0039	0.0000
Release	May	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0005	0.0000	0.0008	0.0004	0.0004
	Jun	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0005	0.0000	0.0040
	Jul	0.0001	0.0001	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0005
	Aug	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000	0.0001	0.0000	0.0004
	Sep	0.0000	0.0001	0.0000	0.0000	0.0001	0.0009	0.0001	0.0000	0.0015	0.0000	0.0005
	Oct	0.0000	0.0000	0.0001	0.0001	0.0000	0.0000	0.0000	0.0000	0.0013	0.0000	0.0000
	Nov	0.0000	0.0000	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Dec	0.0000	0.0000	0.0000	0.0006	0.0000	0.0078	0.0000	0.0000	0.0017	0.0000	0.0000
Total	May	0.0000	0.0010	0.0000	0.0000	0.0000	0.0000	0.0033	0.0000	0.0044	0.0007	0.0004
	Jun	0.0004	0.0045	0.0000	0.0000	0.0000	0.0000	0.0003	0.0000	0.0005	0.0014	0.0043
	Jul	0.0001	0.0231	0.0000	0.0002	0.0000	0.0000	0.0009	0.0000	0.0000	0.0006	0.0006
	Aug	0.0004	0.0095	0.0000	0.0010	0.0000	0.0000	0.0002	0.0000	0.0014	0.0004	0.0006
	Sep	0.0007	0.0018	0.0010	0.0037	0.0001	0.0011	0.0001	0.0013	0.0155	0.0000	0.0007
	Oct	0.0002	0.0006	0.0085	0.0281	0.0000	0.0001	0.0000	0.0001	0.0075	0.0005	0.0000
	Nov	0.0000	0.0000	0.0145	0.0415	0.0000	0.0000	0.0000	0.0008	0.0043	0.0005	0.0000
	Dec	0.0000	0.0000	0.0202	0.0437	0.0000	0.0118	0.0000	0.0157	0.0067	0.0039	0.0000

Appendix 8c. Mean monthly harvest and release, by species, per angler hour in Region 3 (Sumas River to Harrison River) in the 1986 lower Fraser River sport fishery.

		Catch per unit effort									
		Chinook		Coho							
	Month	Adult	Jack	Adult	Jack	Sock-eye	Chum	Steel-head	Cut-throat	Dolly Varden	Stur-geon
Harvest	May	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0239	0.0000	0.0000
	Jun	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Jul	0.0000	0.0089	0.0000	0.0000	0.0000	0.0000	0.0007	0.0000	0.0000	0.0000
	Aug	0.0003	0.0111	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Sep	0.0053	0.0345	0.0033	0.0047	0.0000	0.0000	0.0021	0.0001	0.0001	0.0002
	Oct	0.0056	0.0061	0.0110	0.0017	0.0000	0.0000	0.0021	0.0001	0.0002	0.0000
	Nov	0.0000	0.0000	0.0401	0.0031	0.0000	0.0034	0.0000	0.0062	0.0000	0.0000
	Dec	0.0000	0.0000	0.0318	0.0000	0.0000	0.0000	0.0000	0.0195	0.0063	0.0000
Release	May	0.0239	0.0000	0.0000	0.0000	0.0000	0.0000	0.0078	0.0000	0.0000	0.0000
	Jun	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Jul	0.0086	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Aug	0.0003	0.0003	0.0000	0.0000	0.0003	0.0000	0.0000	0.0000	0.0000	0.0000
	Sep	0.0000	0.0004	0.0002	0.0001	0.0002	0.0000	0.0002	0.0000	0.0000	0.0000
	Oct	0.0001	0.0000	0.0000	0.0000	0.0001	0.0050	0.0101	0.0000	0.0000	0.0000
	Nov	0.0000	0.0000	0.0000	0.0000	0.0000	0.0074	0.0030	0.0018	0.0000	0.0000
	Dec	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0063	0.0000	0.0000
Total	May	0.0239	0.0000	0.0000	0.0000	0.0000	0.0000	0.0078	0.0239	0.0000	0.0000
	Jun	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Jul	0.0086	0.0089	0.0000	0.0000	0.0000	0.0000	0.0007	0.0000	0.0000	0.0000
	Aug	0.0006	0.0114	0.0000	0.0000	0.0003	0.0000	0.0000	0.0000	0.0000	0.0000
	Sep	0.0053	0.0348	0.0035	0.0047	0.0002	0.0000	0.0023	0.0001	0.0001	0.0002
	Oct	0.0057	0.0061	0.0110	0.0018	0.0001	0.0050	0.0121	0.0001	0.0002	0.0000
	Nov	0.0000	0.0000	0.0401	0.0031	0.0000	0.0108	0.0030	0.0079	0.0000	0.0000
	Dec	0.0000	0.0000	0.0318	0.0000	0.0000	0.0000	0.0000	0.0258	0.0063	0.0000

Appendix 8d. Mean monthly harvest and release, by species, per angler hour in Region 4 (Harrison River to Coquihalla River) in the 1986 lower Fraser River sport fishery. a

		Catch per unit effort								
		Chinook		Coho						
	Month	Adult	Jack	Adult	Jack	Sock-eye	Chum	Steel-head	Dolly Varden	Stur-geon
Harvest	May	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Jun	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Jul	0.0000	0.0087	0.0000	0.0000	0.0000	0.0000	0.0010	0.0000	0.0000
	Aug	0.0000	0.0100	0.0000	0.0000	0.0000	0.0000	0.0000	0.0011	0.0000
	Sep	0.0001	0.0080	0.0020	0.0013	0.0000	0.0000	0.0016	0.0004	0.0000
	Oct	0.0000	0.0000	0.0008	0.0010	0.0000	0.0000	0.0043	0.0005	0.0000
	Nov	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Dec	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Release	May	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Jun	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Jul	0.0087	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Aug	0.0003	0.0003	0.0000	0.0000	0.0003	0.0000	0.0000	0.0000	0.0000
	Sep	0.0000	0.0003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Oct	0.0000	0.0000	0.0000	0.0000	0.0000	0.0010	0.0050	0.0000	0.0000
	Nov	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Dec	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	May	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Jun	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Jul	0.0087	0.0087	0.0000	0.0000	0.0000	0.0000	0.0010	0.0000	0.0000
	Aug	0.0003	0.0102	0.0000	0.0000	0.0003	0.0000	0.0000	0.0011	0.0000
	Sep	0.0001	0.0083	0.0020	0.0013	0.0000	0.0000	0.0016	0.0004	0.0000
	Oct	0.0000	0.0000	0.0008	0.0010	0.0000	0.0010	0.0093	0.0005	0.0000
	Nov	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Dec	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

a. Upper boundary moved to the top of Waleach Slough on September 1.

Appendix 9a. Interview responses by month in Region 1 (Strait of Georgia to Pitt River) in the 1987 lower Fraser River sport fishery.

	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Survey sites a	Bro	Bro	Bro	Bro Ric	Bro Ric	Bro Ric	Bro Riv	Bro Tre	Bro Tre	Riv	-
Number of Interviews	28	78	56	215	109	205	376	511	267	14	1,859
Mean Angler Day Length (hr.)											
- All anglers	4.6	4.7	4.2	4.2	3.4	4.0	3.6	4.9	4.2	4.5	4.2
- Complete trip interviews											
Number	20	57	38	110	64	186	353	361	253	14	1,456
Hours	4.4	4.6	3.7	3.9	3.1	4.0	3.5	4.3	4.2	4.5	4.0
- Incomplete trip interviews											
Number	8	21	18	105	45	19	23	150	14	0	403
Hours	5.0	4.8	5.2	4.5	3.8	4.1	4.5	6.3	3.7	-	5.1
Mean number of anglers per party	1.1	1.2	1.1	1.6	1.7	1.6	1.4	1.2	1.4	1.1	1.4
Target Species											
- Chinook	9	1	4	23	24	26	1	0	0	0	88
- Chinook jack	0	0	1	18	11	7	0	0	0	0	37
- Coho	0	0	0	0	0	26	190	416	190	0	822
- Sockeye	0	0	0	0	0	1	0	0	0	0	1
- Steelhead	19	14	0	26	1	0	0	0	4	0	64
- Cutthroat	0	0	0	0	0	2	2	0	0	0	4
- Dolly Varden	0	1	2	0	0	0	0	0	0	0	3
- Sturgeon	0	0	0	0	10	13	2	0	0	0	25
- Anything	0	62	49	148	53	130	181	95	73	14	805
Harvested Catch											
- Chinook	0	0	0	0	0	0	0	1	0	0	1
- Chinook jack	0	0	0	3	5	8	0	0	0	0	16
- Coho	0	0	0	0	0	1	6	44	19	1	71
- Coho jack	0	0	0	0	0	1	18	350	150	0	519
- Chum	0	0	0	0	0	0	0	0	1	0	1
- Steelhead	0	0	0	1	0	0	0	0	0	0	1
- Rainbow	1	0	0	0	0	0	0	0	0	0	1
- Cutthroat	1	3	0	0	0	25	13	5	1	2	50
- Dolly Varden	2	6	6	11	2	1	3	6	7	2	46
Released Catch											
- Chinook	0	0	0	0	0	0	0	0	1	0	1
- Chinook jack	0	0	0	0	3	0	0	0	0	0	3
- Coho jack	0	0	0	0	0	1	0	10	4	0	15
- Pink	0	0	0	0	0	0	1	0	0	0	1
- Steelhead	0	0	0	1	1	1	0	0	0	0	3
- Cutthroat	0	1	0	0	0	7	5	1	0	0	14
- Dolly Varden	2	1	0	1	1	0	0	1	0	0	6
- Sturgeon	0	0	0	1	1	1	0	0	0	0	3

Continued

Appendix 9a. Interview responses by month in Region 1 (Strait of Georgia to Pitt River) in the 1987 lower Fraser River sport fishery, continued.

	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Inspection of Catch											
- Number	3	2	3	5	1	27	36	400	176	4	657
- Number correct	3	2	3	5	1	27	34	394	175	4	648
Gear											
- Bait	28	77	56	215	46	204	374	511	267	14	1,792
- Lure	0	1	0	0	0	0	0	0	0	0	1
- Bait/Lure	0	0	0	0	0	1	2	0	0	0	3
- Fly	0	0	0	0	0	0	0	0	0	0	0

a. Survey sites: Bro - Brownsville Bar
Ric - Richmond Dump Bar
Riv - River Road Bar
Tre - Tree Island Bar

Appendix 9b. Interview responses by month in Region 2 (Pitt River to Sumas River) in the 1987 lower Fraser River sport fishery.

	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Survey Sites a	Dun Edg Sta	Dun Edg Sta	Dun Edg Sta	Dun Edg Pop Sta	Dun Edg Pop Rid Sta	Dun Edg Rid Sta	Dun Edg Sta	Dun Edg Sta	Dun Edg Rid Sta	Edg Pop Rid Sta	-
Number of Interviews	331	578	822	1,203	905	1,597	1,436	1,681	1,268	104	9,925
Mean Angler Day Length (hr.)											
- All anglers	4.7	5.3	6.8	7.2	6.9	6.0	5.9	6.5	5.2	4.6	6.2
- Complete trip interviews											
Number	236	414	519	691	473	945	989	939	862	90	6,158
Hours	4.3	4.7	6.2	6.5	6.3	5.3	5.7	5.9	4.8	4.6	5.6
- Incomplete trip interviews											
Number	95	164	303	512	432	652	447	742	406	14	3,767
Hours	5.5	6.9	7.9	8.2	7.5	6.8	6.3	7.3	6.1	4.2	7.1
Mean number of anglers per party	2.3	1.8	2.2	2.3	2.3	2.5	2.4	2.5	1.8	1.5	2.3
Target Species											
- Chinook	0	0	111	193	193	8	0	1	0	0	506
- Chinook jack	0	0	2	14	0	0	0	0	0	0	16
- Coho	0	0	0	0	0	0	0	52	145	0	197
- Coho jack	0	0	0	0	0	2	12	0	0	0	14
- Steelhead	14	4	0	0	0	3	0	3	160	0	184
- Cutthroat	28	19	0	1	0	23	4	1	1	0	77
- Sturgeon	0	12	7	2	20	73	8	1	4	1	128
- Anything	289	543	702	993	692	1,488	1,412	1,623	958	103	8,803
Harvested Catch											
- Chinook	0	0	33	30	3	1	1	0	0	0	68
- Chinook jack	0	0	10	31	26	25	7	2	2	0	103
- Coho	0	0	0	0	0	1	8	64	33	0	106
- Coho jack	0	0	0	0	0	7	12	234	177	0	430
- Sockeye	0	0	0	0	0	5	0	0	0	0	5
- Chum	0	0	0	0	0	1	0	0	1	0	2
- Pink	0	0	0	0	0	0	1	0	0	0	1
- Steelhead	2	0	3	5	2	15	3	1	0	0	31
- Rainbow	2	1	0	2	0	19	4	2	2	0	32
- Cutthroat	23	43	1	0	1	42	15	28	38	8	199
- Dolly Varden	2	7	7	7	3	0	0	1	1	0	28
- Sturgeon	0	2	1	0	3	7	0	0	1	0	14
Released Catch											
- Chinook	0	0	2	10	0	0	0	0	0	0	12
- Chinook jack	0	0	0	1	2	0	0	0	0	0	3
- Coho	0	0	0	0	0	0	0	0	2	0	2
- Coho jack	0	0	0	0	0	0	0	1	4	0	5

Continued

Appendix 9b. Interview responses by month in Region 2 (Pitt River to Sumas River) in the 1987 lower Fraser River sport fishery, continued.

	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Released Catch Continued											
- Steelhead	4	10	0	0	0	0	0	0	0	0	14
- Rainbow	0	1	0	0	0	3	3	0	0	0	7
- Cutthroat	7	30	0	0	0	0	0	8	16	0	61
- Dolly Varden	0	3	0	0	1	0	1	0	0	0	5
- Sturgeon	0	12	1	2	9	20	0	1	7	0	52
- Unknown	4	14	2	8	1	1	0	0	0	0	30
Inspection of Catch											
- Number	25	40	39	66	40	77	39	243	194	3	766
- Number correct	25	40	39	66	40	65	39	243	194	3	754
Gear											
- Bait	331	572	819	1,202	841	1,559	1,436	1,679	1,084	104	9,627
- Lure	0	0	1	0	4	6	0	2	0	0	13
- Bait/Lure	0	6	2	1	60	32	0	0	3	0	104
- Fly	0	0	0	0	0	0	0	0	0	0	0

a. Survey sites: Dun - Duncan Bar
Edg - Edgewater Bar
Pop - Poplar Bar
Rid - Ridgedale Bar
Sta - Standard Gas Bar

Appendix 9c. Interview responses by month in Region 3 (Sumas River to Harrison River) in the 1987 lower Fraser River sport fishery.

	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Study Site a	Que	Gra Que Sum	Que Sum	Que Sum	Que	Bow Que Sum	Bow Eng Win	Bow Eng Win	Bow Eng Win	Gra	-
Number of Interviews	16	80	66	149	518	726	1,690	1,267	361	23	4,896
Mean Angler Day Length (hr.)											
- All anglers	3.5	6.0	5.0	7.2	6.6	6.2	9.1	8.1	6.1	3.6	7.7
- Complete trip interviews											
Number	15	45	52	91	435	517	710	520	225	22	2,632
Hours	3.4	4.3	3.2	4.1	6.1	5.2	7.2	6.4	5.4	3.5	6.0
- Incomplete trip interviews											
Number	1	35	14	58	83	209	980	747	136	1	2,264
Hours	5.0	8.4	11.5	12.1	9.3	8.7	10.5	9.3	7.3	7.0	9.7
Mean number of anglers per party	1.0	1.7	2.0	4.9	2.1	2.1	2.8	2.6	2.1	1.6	2.5
Target Species											
- Chinook	0	0	0	0	0	19	57	41	2	0	119
- Chinook jack	0	0	0	0	0	12	0	0	0	0	12
- Coho	0	0	0	0	0	21	21	26	0	0	68
- Coho jack	0	0	0	0	0	1	7	0	0	0	8
- Chum	0	0	0	0	0	0	1	1	0	0	2
- Steelhead	0	3	0	0	0	2	37	157	87	1	287
- Cutthroat	0	1	0	0	0	0	6	2	21	10	40
- Sturgeon	0	0	0	0	0	0	0	1	0	1	2
- Anything	16	76	40	149	518	671	1,561	1,038	153	11	4,233
Harvested Catch											
- Chinook	0	1	0	13	103	10	66	32	1	0	226
- Chinook jack	0	0	2	2	11	59	101	19	0	0	194
- Coho	0	0	0	0	0	2	51	89	23	0	165
- Coho jack	0	0	0	0	0	4	5	27	3	0	39
- Sockeye	0	0	0	0	1	0	0	0	0	0	1
- Pink	0	0	0	0	0	0	2	0	0	0	2
- Steelhead	0	0	0	2	0	0	19	46	6	0	73
- Rainbow	0	1	0	0	0	0	0	0	0	0	1
- Cutthroat	0	10	0	14	0	42	5	2	5	2	80
- Dolly Varden	0	1	0	0	0	0	0	1	0	1	3
- Whitefish	0	0	0	0	0	0	1	1	0	0	2
Released Catch											
- Chinook	0	0	0	4	0	0	2	4	0	0	10
- Chinook jack	0	0	0	0	0	0	2	2	0	0	4
- Coho	0	0	0	0	0	0	1	1	0	0	2
- Coho jack	0	0	0	0	0	0	0	4	0	0	4
- Sockeye	0	0	0	0	0	1	0	0	0	0	1
- Chum	0	0	0	0	0	0	2	44	9	0	55
- Pink	0	0	0	0	0	0	86	63	0	0	149

Continued

Appendix 9c. Interview responses by month in Region 3 (Sumas River to Harrison River) in the 1987 lower Fraser River sport fishery, continued.

	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Released Catch Continued											
- Steelhead	0	0	0	0	0	0	5	7	0	0	12
- Rainbow	0	0	1	8	0	0	1	0	0	0	10
- Cutthroat	0	0	0	26	0	32	6	0	0	2	66
- Sturgeon	0	0	1	0	0	0	0	0	0	0	1
- Unknown	0	1	0	0	0	0	0	0	0	0	1
Inspection of Catch											
- Number	0	8	1	4	64	110	235	200	36	3	661
- Number correct	0	8	1	4	64	110	235	198	36	3	659
Gear											
- Bait	3	10	12	10	6	27	9	18	22	0	117
- Lure	10	28	18	107	471	468	1,108	1,023	281	0	3,514
- Bait/Lure	3	40	36	30	41	231	573	226	58	0	1,238
- Fly	0	2	0	2	0	0	0	0	0	0	4

a. Study sites: Bow - Bowman's Bar
Eng - Englebrich's Bar
Gra - Grassy Bank Bar
Que - Queen's Island Bar
Sum - Sumas River Mouth
Win - Wing Dam Bar

Appendix 9d. Interview responses by month in Region 4 (Harrison River to top of Waleach Slough) in the 1987 lower Fraser River sport fishery. a

	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Survey Sites b	-	-	-	-	-	Fer	Fer	Fer	Fer	Fer	-
Number of Interviews	0	0	0	0	0	26	30	76	30	16	178
Mean Angler Day Length (hr.)											
- All anglers	-	-	-	-	-	6.4	4.8	7.0	4.9	3.6	5.9
- Complete trip interviews											
Number	0	0	0	0	0	12	20	37	21	14	104
Hours	-	-	-	-	-	5.0	4.4	4.2	4.5	3.6	4.3
- Incomplete trip interviews											
Number	0	0	0	0	0	14	10	39	9	2	74
Hours	-	-	-	-	-	7.6	5.5	9.7	51.5	3.5	13.7
Mean number of anglers per party	-	-	-	-	-	2.3	1.4	3.5	1.2	1.3	2.4
Target Species											
- Chinook	0	0	0	0	0	9	1	0	0	0	10
- Chinook jack	0	0	0	0	0	4	0	0	0	0	4
- Coho	0	0	0	0	0	6	1	4	0	0	11
- Coho jack	0	0	0	0	0	2	0	0	0	0	2
- Steelhead	0	0	0	0	0	0	0	12	11	4	27
- Cutthroat	0	0	0	0	0	0	0	0	1	9	10
- Anything	0	0	0	0	0	5	28	60	18	3	114
Harvested Catch											
- Coho	0	0	0	0	0	1	2	0	0	0	3
- Steelhead	0	0	0	0	0	0	0	1	0	0	1
Released Catch											
- Pink	0	0	0	0	0	0	1	4	0	0	5
- Steelhead	0	0	0	0	0	0	0	0	1	0	1
Inspection of Catch											
- Number	0	0	0	0	0	1	0	1	1	0	3
- Number correct	-	-	-	-	-	1	-	1	1	-	3
Gear											
- Bait	0	0	0	0	0	2	0	0	0	7	9
- Lure	0	0	0	0	0	10	23	57	0	5	95
- Bait/Lure	0	0	0	0	0	14	7	19	0	4	44
- Fly	0	0	0	0	0	0	0	0	0	0	0

a. Analysis included Englebrich Bar data.
b. Survey sites: Fer - Ferry Island Bar.

Appendix 10. Daily angler counts by region in the 1987 lower Fraser River sport fishery.

Month	Date	Day of week	Weather	Region a				Total
				1	2	3	4	
March	15-Mar	Sun	Overcast	34	98	15	10	157
	19-Mar	Thu	Overcast	11	45	4	4	64
	29-Mar	Sun	Snow	31	161	30	6	228
	30-Mar	Mon	Snow	11	34	20	4	69
	Weekday	Mean	-	11	40	12	4	67
		%	-	16.5%	59.4%	18.0%	6.0%	-
	Weekend	Mean	-	33	130	23	8	193
		%	-	16.9%	67.3%	11.7%	4.2%	-
April	05-Apr	Sun	Clear	52	83	30	11	176
	14-Apr	Tue	Overcast	12	35	0	0	47
	18-Apr	Sat	Clear/Rain	21	76	7	5	109
	22-Apr	Wed	Clear	13	50	3	1	67
	Weekday	Mean	-	13	43	2	1	57
		%	-	21.9%	74.6%	2.6%	0.9%	-
	Weekend	Mean	-	37	80	19	8	143
		%	-	25.6%	55.8%	13.0%	5.6%	-
May	06-May	Wed	Clear	12	40	0	2	54
	09-May	Sat	Clear	22	92	1	6	121
	18-May	Mon b	Overcast	19	98	4	4	125
	26-May	Tue	Overcast	30	73	18	0	121
	Weekday	Mean	-	21	57	9	1	88
		%	-	24.0%	64.6%	10.3%	1.1%	-
	Weekend	Mean	-	21	95	3	5	123
		%	-	16.7%	77.2%	2.0%	4.1%	-
June	06-Jun	Sat	Clear	64	167	31	6	268
	08-Jun	Mon	Overcast	20	73	12	2	107
	21-Jun	Sun	Rain	63	88	17	0	168
	25-Jun	Thu	Clear	28	74	2	0	104
	Weekday	Mean	-	24	74	7	1	106
		%	-	22.7%	69.7%	6.6%	0.9%	-
	Weekend	Mean	-	64	128	24	3	218
		%	-	29.1%	58.5%	11.0%	1.4%	-
July	05-Jul	Sun	Rain	37	60	42	8	147
	07-Jul	Tue	Rain	23	56	67	5	151
	11-Jul	Sat	Clear	54	159	138	10	361
	13-Jul	Mon	Clear	23	70	69	7	169
	19-Jul	Sun	Rain	91	146	132	22	391
	23-Jul	Thu	Clear	46	74	80	15	215
	25-Jul	Sat	Rain	60	140	140	19	359
	29-Jul	Wed	Clear	19	56	52	9	136

Continued

Appendix 10. Daily angler counts by region in the 1987 lower Fraser River sport fishery, cont'd.

Month	Date	Day of week	Weather	Region a				Total
				1	2	3	4	
July	Weekday	Mean	-	28	64	67	9	168
		%	-	16.5%	38.2%	39.9%	5.4%	-
	Weekend	Mean	-	61	126	113	15	315
		%	-	19.2%	40.1%	35.9%	4.7%	-
August	03-Aug	Mon b	Clear	158	334	149	31	672
	06-Aug	Thu	Clear	40	85	34	3	162
	08-Aug	Sat	Clear	76	166	56	10	308
	11-Aug	Tue	Clear	12	96	37	5	150
	16-Aug	Sun	Overcast	149	249	91	20	509
	21-Aug	Fri	Clear	56	127	67	6	256
	23-Aug	Sun	Clear	103	387	129	15	634
	24-Aug	Mon	Clear	47	134	30	20	231
	26-Aug	Wed	Overcast	39	151	77	17	284
	29-Aug	Sat	Clear	94	212	168	18	492
	Weekday	Mean	-	39	119	49	10	217
		%	-	17.9%	54.8%	22.6%	4.7%	-
	Weekend	Mean	-	116	270	119	19	523
		%	-	22.2%	51.5%	22.7%	3.6%	-
September	02-Sep	Wed	Overcast	29	91	42	5	167
	05-Sep	Sat	Clear	71	286	239	15	611
	07-Sep	Mon b	Clear	140	394	257	32	823
	10-Sep	Thu	Clear	25	111	84	16	236
	13-Sep	Sun	Overcast	189	473	244	49	955
	15-Sep	Tue	Rain	75	63	120	11	269
	18-Sep	Fri	Overcast	64	155	196	21	436
	20-Sep	Sun	Clear	168	449	373	46	1,036
	21-Sep	Mon	Clear	63	97	134	19	313
	26-Sep	Sat	Overcast	147	318	352	30	847
	Weekday	Mean	-	51	103	115	14	284
		%	-	18.0%	36.4%	40.5%	5.1%	-
	Weekend	Mean	-	143	384	293	34	854
		%	-	16.7%	44.9%	34.3%	4.0%	-
October	01-Oct	Thu	Clear	77	166	171	21	435
	04-Oct	Sun	Clear	206	702	439	61	1,408
	08-Oct	Thu	Clear	82	283	138	19	522
	10-Oct	Sat	Clear	182	648	292	31	1,153
	12-Oct	Mon b	Clear	361	916	353	65	1,695
	17-Oct	Sat	Clear	218	592	215	60	1,085
	19-Oct	Mon	Clear	151	374	148	21	694
	21-Oct	Wed	Clear	211	438	175	32	856
	25-Oct	Sun	Rain	292	641	206	58	1,197
	28-Oct	Wed	Overcast	109	222	75	25	431
	Weekday	Mean	-	126	297	141	24	588
		%	-	21.4%	50.5%	24.1%	4.0%	-
	Weekend	Mean	-	252	700	301	55	1,308
		%	-	19.3%	53.5%	23.0%	4.2%	-

Continued

Appendix 10. Daily angler counts by region in the 1987 lower Fraser River sport fishery, continued.

Month	Date	Day of week	Weather	Region a				Total
				1	2	3	4	
November	01-Nov	Sun	Overcast	350	466	216	50	1,082
	10-Nov	Tue	Overcast	94	139	56	22	311
	14-Nov	Sat	Snow/Overcast	143	253	58	28	482
	19-Nov	Thu	Overcast	38	63	27	11	139
	22-Nov	Sun	Rain	35	69	26	4	134
	24-Nov	Tue	Rain	5	12	13	15	45
	Weekday	Mean	-	46	71	32	16	165
		%	-	27.7%	43.2%	19.4%	9.7%	-
	Weekend	Mean	-	176	263	100	27	566
		%	-	31.1%	46.4%	17.7%	4.8%	-
December	10-Dec	Thu	Rain	9	16	0	5	30
	13-Dec	Sun	Overcast	10	33	13	9	65
	19-Dec	Sat	Overcast	8	19	6	4	37
	21-Dec	Mon	Overcast	0	4	0	3	7
	Weekday	Mean	-	5	10	0	4	19
		%	-	24.3%	54.1%	0.0%	21.6%	-
	Weekend	Mean	-	9	26	10	7	51
		%	-	17.6%	51.0%	18.6%	12.7%	-

a. Regions were: 1 - Strait of Georgia to Pitt River;
2 - Pitt River to Sumas River;
3 - Sumas River to Harrison River;
4 - Harrison River to top of Weaver Slough.

b. Statutory holiday.

Appendix 11a. Mean proportion of daily angler effort per hour in Region 1 (Strait of Georgia to Pitt River) in the 1987 lower Fraser River sport fishery.

Day type	Hour	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Weekday	3:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	4:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.2%	0.0%
	5:00	0.0%	0.0%	0.0%	0.0%	0.7%	0.2%	0.9%	0.6%	0.8%	0.0%
	6:00	0.0%	0.0%	0.0%	0.3%	1.4%	0.6%	3.1%	1.7%	2.8%	0.0%
	7:00	0.0%	0.0%	0.0%	1.0%	1.4%	1.5%	6.2%	3.3%	6.3%	0.0%
	8:00	0.0%	1.5%	2.6%	1.7%	3.8%	5.3%	6.9%	5.3%	10.5%	0.0%
	9:00	1.7%	5.4%	5.3%	2.7%	5.6%	8.5%	8.9%	7.4%	12.3%	5.9%
	10:00	3.5%	7.7%	7.9%	6.0%	9.4%	9.0%	10.5%	9.9%	12.7%	11.8%
	11:00	10.4%	8.7%	13.1%	7.7%	11.7%	10.8%	12.8%	9.6%	15.2%	17.6%
	12:00	14.5%	10.1%	12.9%	8.8%	12.2%	10.3%	10.4%	10.1%	13.0%	23.5%
	13:00	16.6%	13.4%	13.6%	10.3%	7.3%	10.4%	9.0%	9.6%	10.6%	23.5%
	14:00	15.5%	13.8%	14.3%	10.6%	7.7%	9.5%	10.3%	9.1%	5.7%	17.6%
	15:00	14.5%	10.6%	13.6%	10.8%	7.7%	6.9%	5.0%	7.9%	4.3%	0.0%
	16:00	13.0%	9.2%	7.9%	6.0%	2.8%	8.9%	5.7%	7.8%	4.5%	0.0%
	17:00	7.8%	11.5%	3.2%	8.1%	2.8%	5.8%	3.9%	8.3%	1.1%	0.0%
	18:00	2.6%	6.9%	1.6%	7.8%	4.2%	3.0%	3.2%	7.0%	0.0%	0.0%
	19:00	0.0%	1.2%	1.6%	6.9%	3.8%	4.5%	2.2%	2.0%	0.0%	0.0%
	20:00	0.0%	0.0%	1.6%	4.5%	8.5%	3.7%	1.0%	0.3%	0.0%	0.0%
	21:00	0.0%	0.0%	0.8%	4.8%	7.0%	1.2%	0.0%	0.0%	0.0%	0.0%
	22:00	0.0%	0.0%	0.0%	1.7%	1.9%	0.0%	0.0%	0.0%	0.0%	0.0%
	23:00	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	24:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Weekend	2:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	3:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.2%	0.1%	0.0%
	4:00	0.0%	0.0%	0.0%	0.2%	0.2%	0.3%	0.3%	0.8%	0.2%	0.0%
	5:00	0.0%	0.0%	0.0%	0.5%	1.0%	1.3%	1.3%	1.8%	0.5%	0.0%
	6:00	0.0%	1.0%	0.5%	2.2%	2.3%	3.8%	3.4%	3.3%	1.5%	0.7%
	7:00	0.0%	2.8%	2.0%	4.1%	4.3%	5.7%	6.6%	5.2%	3.5%	2.8%
	8:00	0.0%	4.2%	9.8%	5.8%	8.2%	8.4%	8.9%	9.3%	5.1%	6.3%
	9:00	0.0%	5.6%	9.8%	8.7%	7.8%	7.6%	9.6%	10.0%	14.0%	12.6%
	10:00	5.0%	8.3%	11.7%	9.4%	8.2%	7.8%	7.6%	8.8%	13.3%	12.6%
	11:00	18.3%	12.0%	7.8%	9.2%	9.7%	8.1%	8.3%	8.8%	12.1%	12.6%
	12:00	18.3%	13.5%	7.8%	9.9%	10.5%	11.6%	10.0%	8.1%	12.4%	16.8%
	13:00	13.3%	11.6%	10.2%	5.8%	9.3%	8.3%	8.7%	6.9%	11.1%	14.7%
	14:00	11.7%	10.8%	13.3%	7.4%	9.3%	7.3%	7.3%	7.1%	10.2%	12.6%
	15:00	13.3%	10.4%	10.2%	7.4%	8.0%	6.8%	4.2%	7.0%	8.0%	8.4%
	16:00	20.0%	11.3%	9.1%	3.6%	4.3%	7.0%	9.0%	8.3%	5.6%	0.0%
	17:00	0.0%	7.8%	5.2%	4.7%	5.4%	4.9%	8.1%	6.1%	1.9%	0.0%
	18:00	0.0%	0.9%	1.3%	5.2%	5.4%	4.3%	4.0%	6.1%	0.5%	0.0%
	19:00	0.0%	0.0%	1.3%	5.7%	3.5%	3.2%	2.7%	1.7%	0.0%	0.0%
	20:00	0.0%	0.0%	0.0%	4.8%	1.6%	3.0%	0.0%	0.5%	0.0%	0.0%
	21:00	0.0%	0.0%	0.0%	3.9%	1.2%	0.5%	0.0%	0.1%	0.0%	0.0%
	22:00	0.0%	0.0%	0.0%	1.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	23:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Appendix 11b. Mean proportion of daily angler effort per hour in Region 2 (Pitt River to Sumas River) in the 1987 lower Fraser River sport fishery.

Day type	Hour	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Weekday	1:00	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	2:00	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	3:00	0.2%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%
	4:00	0.2%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%
	5:00	0.2%	0.0%	0.0%	0.0%	0.0%	0.4%	0.1%	0.2%	0.1%	0.0%
	6:00	0.3%	0.1%	0.0%	0.0%	0.1%	0.8%	0.4%	0.8%	1.0%	0.5%
	7:00	0.6%	0.4%	0.0%	1.5%	1.3%	1.7%	1.2%	2.6%	3.6%	1.1%
	8:00	3.4%	4.3%	4.0%	3.9%	3.5%	3.6%	3.6%	5.9%	6.7%	1.7%
	9:00	6.2%	7.3%	6.6%	6.0%	6.5%	5.4%	6.0%	7.1%	9.1%	4.5%
	10:00	8.7%	9.7%	8.2%	7.9%	7.9%	6.6%	8.0%	9.3%	10.9%	12.3%
	11:00	13.2%	12.4%	9.0%	8.5%	9.4%	8.0%	9.7%	10.7%	11.7%	13.3%
	12:00	15.3%	13.6%	9.9%	8.6%	9.6%	8.1%	11.3%	11.0%	11.9%	18.4%
	13:00	15.5%	14.0%	10.4%	9.1%	10.0%	8.1%	11.3%	11.1%	11.8%	19.2%
	14:00	14.4%	13.1%	10.3%	9.3%	10.2%	8.0%	10.5%	10.4%	11.1%	13.5%
	15:00	10.0%	10.1%	9.2%	8.4%	9.6%	7.8%	9.6%	9.1%	10.0%	10.3%
	16:00	7.4%	7.3%	10.0%	8.9%	7.4%	8.1%	8.3%	6.9%	7.5%	4.6%
	17:00	2.7%	3.7%	8.1%	7.6%	6.5%	7.5%	7.8%	6.1%	4.0%	0.5%
	18:00	0.9%	1.4%	5.9%	6.4%	5.2%	7.5%	6.0%	4.3%	0.5%	0.0%
	19:00	0.3%	1.2%	4.1%	5.3%	4.4%	6.3%	4.5%	2.8%	0.0%	0.0%
	20:00	0.0%	0.9%	2.3%	4.0%	3.9%	5.5%	1.2%	1.1%	0.0%	0.0%
	21:00	0.0%	0.4%	1.3%	2.4%	2.1%	3.5%	0.4%	0.4%	0.0%	0.0%
	22:00	0.0%	0.1%	0.5%	1.5%	1.4%	1.6%	0.1%	0.2%	0.0%	0.0%
	23:00	0.0%	0.0%	0.2%	0.6%	0.8%	0.6%	0.0%	0.1%	0.0%	0.0%
	24:00	0.0%	0.0%	0.0%	0.1%	0.3%	0.1%	0.0%	0.1%	0.0%	0.0%
Weekend	2:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	3:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
	4:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
	5:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.1%	0.1%	0.0%	0.0%
	6:00	0.0%	0.1%	0.1%	0.1%	0.1%	0.8%	0.7%	0.6%	0.7%	0.0%
	7:00	0.2%	0.9%	0.6%	1.4%	1.5%	1.7%	2.0%	2.3%	2.7%	0.2%
	8:00	1.6%	2.9%	4.5%	3.6%	4.3%	3.4%	4.3%	6.8%	5.4%	0.9%
	9:00	4.3%	6.4%	6.3%	5.6%	6.4%	5.0%	6.8%	8.6%	7.8%	3.5%
	10:00	7.4%	8.9%	8.4%	7.9%	7.8%	6.4%	9.3%	9.3%	9.7%	11.1%
	11:00	11.6%	10.1%	9.9%	9.0%	9.3%	7.8%	10.9%	10.0%	11.6%	16.2%
	12:00	13.8%	10.8%	10.9%	9.1%	10.1%	8.0%	10.0%	10.8%	12.6%	18.5%
	13:00	17.9%	11.7%	11.3%	9.9%	9.9%	9.1%	9.9%	11.1%	12.7%	17.3%
	14:00	16.3%	11.3%	11.3%	10.5%	10.1%	9.4%	10.1%	10.6%	12.1%	16.6%
	15:00	14.2%	10.3%	10.0%	9.6%	9.3%	9.0%	9.3%	9.6%	11.2%	11.5%
	16:00	6.3%	9.5%	9.8%	9.7%	7.5%	8.9%	7.6%	6.7%	7.6%	3.4%
	17:00	4.9%	7.1%	7.9%	7.7%	6.9%	7.9%	6.3%	5.1%	4.4%	0.8%
	18:00	1.4%	5.3%	5.1%	6.2%	5.6%	6.9%	4.9%	3.9%	1.3%	0.0%
	19:00	0.0%	2.7%	2.6%	4.3%	4.7%	5.4%	3.8%	2.7%	0.2%	0.0%
	20:00	0.0%	1.4%	1.0%	2.7%	3.4%	4.3%	2.5%	1.3%	0.0%	0.0%
	21:00	0.0%	0.5%	0.4%	1.4%	1.8%	2.7%	1.0%	0.4%	0.0%	0.0%
	22:00	0.0%	0.0%	0.1%	0.9%	1.0%	1.5%	0.3%	0.0%	0.0%	0.0%
	23:00	0.0%	0.0%	0.0%	0.3%	0.4%	0.8%	0.2%	0.0%	0.0%	0.0%
	24:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.1%	0.0%	0.0%	0.0%

Appendix 11c. Mean proportion of daily angler effort per hour in Region 3 (Sumas River to Harrison River) in the 1987 lower Fraser River sport fishery.

Day type	Hour	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Weekday	1:00	0.0%	0.0%	0.0%	0.4%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
	2:00	0.0%	0.0%	0.0%	0.4%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
	3:00	0.0%	0.0%	0.0%	0.4%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
	4:00	0.0%	0.0%	0.0%	0.8%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
	5:00	0.0%	0.0%	0.0%	1.6%	0.3%	0.1%	0.2%	0.0%	0.0%	0.0%
	6:00	0.0%	0.7%	0.0%	1.8%	0.7%	0.5%	2.1%	1.3%	1.0%	0.0%
	7:00	0.0%	1.9%	0.0%	2.2%	1.5%	1.2%	5.2%	4.2%	3.2%	0.0%
	8:00	0.0%	1.9%	0.0%	3.5%	3.3%	4.8%	7.2%	6.5%	6.1%	0.0%
	9:00	3.9%	8.4%	0.0%	6.6%	5.7%	9.4%	8.1%	9.1%	10.1%	0.0%
	10:00	3.9%	8.4%	1.1%	9.7%	7.9%	10.8%	8.8%	9.8%	12.0%	0.0%
	11:00	0.0%	8.5%	1.1%	9.7%	8.9%	11.8%	9.0%	9.2%	11.0%	0.0%
	12:00	16.5%	13.0%	0.0%	9.7%	8.9%	12.2%	7.9%	9.0%	11.8%	0.0%
	13:00	18.9%	13.6%	13.8%	5.8%	9.3%	9.0%	7.6%	8.9%	11.5%	0.0%
	14:00	18.9%	11.8%	15.1%	4.5%	7.9%	8.3%	7.5%	8.7%	10.2%	0.0%
	15:00	14.2%	7.4%	13.8%	4.8%	7.3%	7.3%	7.1%	8.2%	8.9%	0.0%
	16:00	23.6%	6.5%	27.5%	5.3%	7.3%	7.4%	6.4%	7.1%	7.5%	0.0%
	17:00	0.0%	5.6%	15.5%	5.9%	7.1%	4.5%	5.8%	6.1%	5.3%	0.0%
	18:00	0.0%	5.6%	12.0%	6.3%	6.1%	3.4%	5.3%	5.5%	1.4%	0.0%
	19:00	0.0%	1.9%	0.0%	6.3%	5.1%	3.6%	4.9%	4.4%	0.1%	0.0%
	20:00	0.0%	1.4%	0.0%	3.2%	5.1%	2.6%	4.3%	1.6%	0.0%	0.0%
	21:00	0.0%	1.4%	0.0%	3.9%	4.5%	2.4%	1.8%	0.4%	0.0%	0.0%
	22:00	0.0%	1.4%	0.0%	3.3%	2.0%	0.6%	0.7%	0.0%	0.0%	0.0%
	23:00	0.0%	0.7%	0.0%	2.7%	0.5%	0.2%	0.1%	0.0%	0.0%	0.0%
	24:00	0.0%	0.0%	0.0%	1.2%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Weekend	1:00	0.0%	0.0%	0.0%	0.3%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%
	2:00	0.0%	0.0%	0.0%	0.3%	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%
	3:00	0.0%	0.0%	0.0%	0.3%	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%
	4:00	0.0%	0.0%	0.0%	0.3%	1.2%	0.0%	0.0%	0.0%	0.0%	0.0%
	5:00	0.0%	0.0%	0.0%	0.4%	1.7%	0.1%	0.1%	0.1%	0.0%	0.0%
	6:00	0.0%	0.0%	0.0%	0.8%	3.0%	0.9%	2.6%	0.9%	0.1%	0.0%
	7:00	0.0%	0.0%	0.0%	1.2%	4.7%	2.3%	5.8%	3.6%	1.5%	0.0%
	8:00	0.0%	0.0%	0.0%	2.1%	6.6%	2.8%	6.6%	7.1%	3.9%	0.0%
	9:00	0.0%	4.0%	6.6%	2.4%	7.8%	4.6%	7.4%	8.5%	10.6%	5.1%
	10:00	0.0%	5.8%	9.5%	4.6%	8.8%	6.8%	8.0%	9.8%	11.0%	13.7%
	11:00	11.1%	6.2%	10.3%	5.2%	9.0%	7.8%	8.2%	9.3%	11.3%	20.6%
	12:00	27.8%	7.7%	4.9%	6.7%	9.2%	7.0%	8.0%	10.0%	11.3%	20.6%
	13:00	27.8%	12.3%	9.1%	10.2%	8.2%	9.1%	7.9%	9.5%	10.9%	17.1%
	14:00	22.2%	15.0%	10.6%	9.6%	7.8%	8.8%	7.8%	8.9%	10.7%	13.7%
	15:00	11.1%	13.1%	12.7%	8.8%	6.8%	9.7%	7.4%	8.2%	10.1%	6.9%
	16:00	0.0%	11.0%	13.2%	9.7%	5.3%	9.3%	7.0%	7.1%	8.5%	1.7%
	17:00	0.0%	9.2%	11.5%	8.5%	4.1%	7.9%	6.3%	6.1%	8.1%	0.6%
	18:00	0.0%	5.2%	3.3%	7.6%	3.0%	7.6%	5.9%	5.0%	2.0%	0.0%
	19:00	0.0%	4.0%	3.3%	5.5%	2.5%	6.1%	5.3%	4.1%	0.0%	0.0%
	20:00	0.0%	2.0%	1.6%	4.9%	2.3%	4.8%	4.6%	1.4%	0.0%	0.0%
	21:00	0.0%	1.6%	1.3%	4.6%	2.1%	3.4%	1.0%	0.4%	0.0%	0.0%
	22:00	0.0%	1.2%	0.9%	3.4%	1.4%	0.8%	0.1%	0.1%	0.0%	0.0%
	23:00	0.0%	1.2%	0.9%	1.9%	1.1%	0.2%	0.0%	0.0%	0.0%	0.0%
	24:00	0.0%	0.6%	0.4%	0.6%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%

Appendix 11d. Mean proportion of daily angler effort per hour in Region 4 (Harrison River to the top of Waleach Slough) in the 1987 lower Fraser River sport fishery. a

Day type	Hour	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Weekday	3:00	-	-	-	-	-	0.0%	0.0%	0.0%	0.0%	0.0%
	4:00	-	-	-	-	-	0.0%	0.0%	0.0%	0.0%	0.0%
	5:00	-	-	-	-	-	0.0%	0.0%	0.0%	0.0%	0.0%
	6:00	-	-	-	-	-	0.0%	0.6%	0.6%	0.6%	0.0%
	7:00	-	-	-	-	-	0.0%	2.0%	2.5%	2.8%	0.0%
	8:00	-	-	-	-	-	2.2%	5.0%	5.1%	5.9%	0.0%
	9:00	-	-	-	-	-	2.2%	7.0%	8.2%	9.7%	0.0%
	10:00	-	-	-	-	-	2.2%	8.9%	8.2%	12.1%	4.2%
	11:00	-	-	-	-	-	8.7%	9.8%	9.3%	11.2%	12.5%
	12:00	-	-	-	-	-	10.9%	10.0%	8.8%	13.0%	20.8%
	13:00	-	-	-	-	-	7.3%	10.0%	9.1%	12.9%	25.0%
	14:00	-	-	-	-	-	10.2%	8.9%	8.9%	10.9%	20.8%
	15:00	-	-	-	-	-	6.6%	8.4%	8.1%	10.3%	12.5%
	16:00	-	-	-	-	-	4.4%	7.6%	8.9%	6.3%	4.2%
	17:00	-	-	-	-	-	4.4%	5.4%	6.4%	4.1%	0.0%
	18:00	-	-	-	-	-	6.6%	5.3%	6.4%	0.4%	0.0%
	19:00	-	-	-	-	-	6.6%	4.3%	5.6%	0.0%	0.0%
	20:00	-	-	-	-	-	6.6%	3.9%	3.0%	0.0%	0.0%
	21:00	-	-	-	-	-	6.6%	2.3%	0.9%	0.0%	0.0%
	22:00	-	-	-	-	-	6.6%	0.8%	0.1%	0.0%	0.0%
	23:00	-	-	-	-	-	5.7%	0.0%	0.0%	0.0%	0.0%
	24:00	-	-	-	-	-	2.5%	0.0%	0.0%	0.0%	0.0%
Weekend	2:00	-	-	-	-	-	0.0%	0.0%	0.0%	0.0%	0.0%
	3:00	-	-	-	-	-	0.0%	0.0%	0.0%	0.0%	0.0%
	4:00	-	-	-	-	-	1.0%	0.0%	0.0%	0.0%	0.0%
	5:00	-	-	-	-	-	2.0%	0.0%	0.0%	0.0%	0.0%
	6:00	-	-	-	-	-	2.4%	1.0%	0.5%	0.2%	0.0%
	7:00	-	-	-	-	-	2.7%	2.7%	2.4%	1.6%	0.8%
	8:00	-	-	-	-	-	4.5%	4.5%	5.0%	5.2%	3.1%
	9:00	-	-	-	-	-	4.5%	6.1%	6.2%	10.8%	9.3%
	10:00	-	-	-	-	-	4.5%	7.8%	8.4%	12.1%	9.3%
	11:00	-	-	-	-	-	4.5%	8.7%	9.3%	12.9%	18.6%
	12:00	-	-	-	-	-	7.2%	8.8%	10.2%	12.5%	15.5%
	13:00	-	-	-	-	-	6.6%	8.9%	9.9%	11.0%	9.3%
	14:00	-	-	-	-	-	10.2%	9.2%	9.1%	11.0%	15.5%
	15:00	-	-	-	-	-	10.2%	8.3%	8.4%	10.3%	15.5%
	16:00	-	-	-	-	-	9.0%	8.5%	7.7%	6.6%	3.1%
	17:00	-	-	-	-	-	9.0%	7.8%	6.5%	4.6%	0.0%
	18:00	-	-	-	-	-	5.4%	6.4%	6.6%	1.3%	0.0%
	19:00	-	-	-	-	-	5.4%	4.8%	5.9%	0.0%	0.0%
	20:00	-	-	-	-	-	5.4%	4.3%	2.9%	0.0%	0.0%
	21:00	-	-	-	-	-	5.4%	1.8%	0.8%	0.0%	0.0%
	22:00	-	-	-	-	-	0.5%	0.5%	0.1%	0.0%	0.0%
	23:00	-	-	-	-	-	0.0%	0.0%	0.0%	0.0%	0.0%

a. '-' indicated the monthly effort profile was not assessed.

Appendix 12a. Mean monthly harvest and release, by species, per angler hour in Region 1 (Strait of Georgia to Pitt River) in the 1987 lower Fraser River sport fishery.

		Catch per unit effort										
		Chinook		Coho								
	Month	Adult	Jack	Adult	Jack	Pink	Chum	Steel-head	Rain-bow	Cut-throat	Dolly Varden	Stur-geon
Harvest	Mar	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0142	0.0085	0.0227	0.0000
	Apr	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0059	0.0138	0.0000
	May	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0320	0.0000
	Jun	0.0000	0.0045	0.0000	0.0000	0.0000	0.0000	0.0006	0.0000	0.0000	0.0224	0.0000
	Jul	0.0000	0.0117	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0027	0.0000
	Aug	0.0000	0.0082	0.0015	0.0006	0.0000	0.0000	0.0000	0.0000	0.0299	0.0006	0.0000
	Sep	0.0000	0.0000	0.0035	0.0135	0.0000	0.0000	0.0000	0.0000	0.0080	0.0019	0.0000
	Oct	0.0002	0.0000	0.0286	0.1675	0.0000	0.0000	0.0000	0.0000	0.0022	0.0033	0.0000
	Nov	0.0000	0.0000	0.0162	0.1129	0.0000	0.0006	0.0000	0.0000	0.0005	0.0067	0.0000
	Dec	0.0000	0.0000	0.0125	0.0000	0.0000	0.0000	0.0000	0.0000	0.0463	0.0366	0.0000
Release	Mar	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0173	0.0000
	Apr	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0017	0.0042	0.0000
	May	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Jun	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0012	0.0000	0.0000	0.0010	0.0008
	Jul	0.0000	0.0055	0.0000	0.0000	0.0000	0.0000	0.0009	0.0000	0.0000	0.0009	0.0036
	Aug	0.0000	0.0000	0.0000	0.0010	0.0000	0.0000	0.0015	0.0000	0.0097	0.0000	0.0015
	Sep	0.0000	0.0000	0.0000	0.0000	0.0009	0.0000	0.0000	0.0000	0.0029	0.0000	0.0000
	Oct	0.0000	0.0000	0.0000	0.0150	0.0000	0.0000	0.0000	0.0000	0.0002	0.0002	0.0000
	Nov	0.0005	0.0000	0.0000	0.0037	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Dec	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	Mar	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0142	0.0085	0.0400	0.0000
	Apr	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0077	0.0180	0.0000
	May	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0320	0.0000
	Jun	0.0000	0.0045	0.0000	0.0000	0.0000	0.0000	0.0018	0.0000	0.0000	0.0234	0.0008
	Jul	0.0000	0.0172	0.0000	0.0000	0.0000	0.0000	0.0009	0.0000	0.0000	0.0036	0.0036
	Aug	0.0000	0.0082	0.0015	0.0016	0.0000	0.0000	0.0015	0.0000	0.0396	0.0006	0.0015
	Sep	0.0000	0.0000	0.0035	0.0135	0.0009	0.0000	0.0000	0.0000	0.0109	0.0019	0.0000
	Oct	0.0002	0.0000	0.0286	0.1825	0.0000	0.0000	0.0000	0.0000	0.0024	0.0035	0.0000
	Nov	0.0005	0.0000	0.0162	0.1166	0.0000	0.0006	0.0000	0.0000	0.0005	0.0067	0.0000
	Dec	0.0000	0.0000	0.0125	0.0000	0.0000	0.0000	0.0000	0.0000	0.0463	0.0366	0.0000

Appendix 12b. Mean monthly harvest and release, by species, per angler hour in Region 2 (Pitt River to Sumas River) in the 1987 lower Fraser River sport fishery.

		Catch per unit effort											
		Chinook		Coho									
	Month	Adult	Jack	Adult	Jack	Sock-eye	Pink	Chum	Steel-head	Rain-bow	Cut-throat	Dolly Varden	Stur-geon
Harvest	Mar	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0010	0.0016	0.0163	0.0017	0.0000
	Apr	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	0.0183	0.0023	0.0007
	May	0.0078	0.0022	0.0000	0.0000	0.0000	0.0000	0.0000	0.0005	0.0000	0.0001	0.0012	0.0001
	Jun	0.0037	0.0035	0.0000	0.0000	0.0000	0.0000	0.0000	0.0007	0.0003	0.0000	0.0007	0.0000
	Jul	0.0011	0.0049	0.0000	0.0000	0.0000	0.0000	0.0000	0.0007	0.0000	0.0001	0.0007	0.0012
	Aug	0.0001	0.0030	0.0000	0.0010	0.0004	0.0000	0.0002	0.0021	0.0028	0.0061	0.0000	0.0011
	Sep	0.0001	0.0010	0.0018	0.0017	0.0000	0.0001	0.0000	0.0007	0.0007	0.0019	0.0000	0.0000
	Oct	0.0000	0.0002	0.0113	0.0342	0.0000	0.0000	0.0000	0.0001	0.0004	0.0030	0.0001	0.0000
	Nov	0.0000	0.0003	0.0051	0.0277	0.0000	0.0000	0.0002	0.0000	0.0003	0.0061	0.0002	0.0001
	Dec	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0205	0.0000	0.0000
Release	Mar	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0019	0.0000	0.0055	0.0000	0.0000
	Apr	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0050	0.0005	0.0113	0.0013	0.0056
	May	0.0005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0004
	Jun	0.0012	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003
	Jul	0.0000	0.0003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0034
	Aug	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0005	0.0000	0.0000	0.0017
	Sep	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0006	0.0000	0.0002	0.0000
	Oct	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0010	0.0000	0.0001
	Nov	0.0000	0.0000	0.0003	0.0007	0.0000	0.0000	0.0000	0.0000	0.0000	0.0032	0.0000	0.0011
	Dec	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	Mar	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0029	0.0016	0.0218	0.0017	0.0000
	Apr	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0050	0.0008	0.0296	0.0036	0.0063
	May	0.0084	0.0022	0.0000	0.0000	0.0000	0.0000	0.0000	0.0005	0.0000	0.0001	0.0012	0.0005
	Jun	0.0048	0.0036	0.0000	0.0000	0.0000	0.0000	0.0000	0.0007	0.0003	0.0000	0.0007	0.0003
	Jul	0.0011	0.0052	0.0000	0.0000	0.0000	0.0000	0.0000	0.0007	0.0000	0.0001	0.0008	0.0046
	Aug	0.0001	0.0030	0.0000	0.0010	0.0004	0.0000	0.0002	0.0021	0.0033	0.0061	0.0000	0.0028
	Sep	0.0001	0.0010	0.0018	0.0017	0.0000	0.0001	0.0000	0.0007	0.0013	0.0019	0.0002	0.0000
	Oct	0.0000	0.0002	0.0113	0.0343	0.0000	0.0000	0.0000	0.0001	0.0004	0.0040	0.0001	0.0001
	Nov	0.0000	0.0003	0.0054	0.0284	0.0000	0.0000	0.0002	0.0000	0.0003	0.0092	0.0002	0.0012
	Dec	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0205	0.0000	0.0000

Appendix 12c. Mean monthly harvest and release, by species, per angler hour in Region 3 (Sumas River to Harrison River) in the 1987 lower Fraser River sport fishery.

		Catch per unit effort											
		Chinook		Coho									
	Month	Adult	Jack	Adult	Jack	Sock-eye	Pink	Chum	Steel-head	Rain-bow	Cut-throat	Dolly Varden	Stur-geon
Harvest	Mar	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Apr	0.0042	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0009	0.0295	0.0028	0.0000
	May	0.0000	0.0032	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Jun	0.0159	0.0019	0.0000	0.0000	0.0000	0.0000	0.0000	0.0027	0.0000	0.0135	0.0000	0.0000
	Jul	0.0404	0.0040	0.0000	0.0000	0.0005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Aug	0.0022	0.0165	0.0009	0.0009	0.0000	0.0000	0.0000	0.0000	0.0000	0.0335	0.0000	0.0000
	Sep	0.0048	0.0063	0.0028	0.0005	0.0000	0.0001	0.0000	0.0013	0.0000	0.0004	0.0000	0.0000
	Oct	0.0034	0.0016	0.0129	0.0033	0.0000	0.0000	0.0000	0.0052	0.0000	0.0005	0.0001	0.0000
	Nov	0.0003	0.0000	0.0114	0.0017	0.0000	0.0000	0.0000	0.0023	0.0000	0.0017	0.0000	0.0000
	Dec	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0367	0.0193	0.0000
Release	Mar	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Apr	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	May	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0016	0.0000	0.0000	0.0024
	Jun	0.0046	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0101	0.0314	0.0000	0.0000
	Jul	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Aug	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0322	0.0000	0.0000
	Sep	0.0001	0.0001	0.0001	0.0000	0.0000	0.0059	0.0002	0.0003	0.0001	0.0003	0.0000	0.0000
	Oct	0.0004	0.0002	0.0000	0.0005	0.0000	0.0055	0.0049	0.0006	0.0000	0.0000	0.0000	0.0000
	Nov	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0040	0.0000	0.0000	0.0000	0.0000	0.0000
	Dec	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0367	0.0000	0.0000
Total	Mar	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Apr	0.0042	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0009	0.0295	0.0028	0.0000
	May	0.0000	0.0032	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0016	0.0000	0.0000	0.0024
	Jun	0.0205	0.0019	0.0000	0.0000	0.0000	0.0000	0.0000	0.0027	0.0101	0.0449	0.0000	0.0000
	Jul	0.0404	0.0040	0.0000	0.0000	0.0005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Aug	0.0022	0.0165	0.0009	0.0009	0.0001	0.0000	0.0000	0.0000	0.0000	0.0657	0.0000	0.0000
	Sep	0.0050	0.0064	0.0028	0.0005	0.0000	0.0060	0.0002	0.0016	0.0001	0.0007	0.0000	0.0000
	Oct	0.0038	0.0019	0.0130	0.0038	0.0000	0.0055	0.0049	0.0058	0.0000	0.0005	0.0001	0.0000
	Nov	0.0003	0.0000	0.0114	0.0017	0.0000	0.0000	0.0040	0.0023	0.0000	0.0017	0.0000	0.0000
	Dec	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0734	0.0193	0.0000

Appendix 12d. Mean monthly harvest and release, by species, per angler hour in Region 4 (Harrison River to top of Waleach Slough) in the 1987 lower Fraser River sport fishery.

		Catch per unit effort							
		Chinook		Coho					
	Month	Adult	Jack	Adult	Jack	Pink	Chum	Steel-head	Cut-throat
Harvest	Mar a	-	-	-	-	-	-	-	-
	Apr a	-	-	-	-	-	-	-	-
	May a	-	-	-	-	-	-	-	-
	Jun a	-	-	-	-	-	-	-	-
	Jul a	-	-	-	-	-	-	-	-
	Aug	0.0000	0.0000	0.0043	0.0000	0.0000	0.0000	0.0000	0.0000
	Sep	0.0018	0.0015	0.0020	0.0006	0.0005	0.0000	0.0026	0.0003
	Oct	0.0001	0.0000	0.0003	0.0000	0.0000	0.0001	0.0065	0.0000
	Nov	0.0000	0.0000	0.0012	0.0000	0.0000	0.0000	0.0044	0.0029
	Dec	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Release	Mar a	-	-	-	-	-	-	-	-
	Apr a	-	-	-	-	-	-	-	-
	May a	-	-	-	-	-	-	-	-
	Jun a	-	-	-	-	-	-	-	-
	Jul a	-	-	-	-	-	-	-	-
	Aug	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Sep	0.0003	0.0000	0.0000	0.0000	0.0072	0.0000	0.0005	0.0000
	Oct	0.0000	0.0000	0.0000	0.0000	0.0058	0.0000	0.0003	0.0000
	Nov	0.0000	0.0000	0.0000	0.0000	0.0000	0.0006	0.0010	0.0000
	Dec	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	Mar a	-	-	-	-	-	-	-	-
	Apr a	-	-	-	-	-	-	-	-
	May a	-	-	-	-	-	-	-	-
	Jun a	-	-	-	-	-	-	-	-
	Jul a	-	-	-	-	-	-	-	-
	Aug	0.0000	0.0000	0.0043	0.0000	0.0000	0.0000	0.0000	0.0000
	Sep	0.0021	0.0015	0.0020	0.0006	0.0077	0.0000	0.0031	0.0003
	Oct	0.0001	0.0000	0.0003	0.0000	0.0058	0.0001	0.0067	0.0000
	Nov	0.0000	0.0000	0.0012	0.0000	0.0000	0.0006	0.0054	0.0029
	Dec	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

a. CPUE could not be estimated because Ferry Island and Englebrich bars were not surveyed.

Appendix 13a. Interview responses by month in Region 1 (Strait of Georgia to Pitt River) in the 1988 lower Fraser River sport fishery.

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Study Sites a	Bro	Bro	Bro Ric	Bro Ric	Bro Ric	Bro Riv	Bro Tre	Bro Tre	Tre	-
Number of interviews	9	59	92	117	124	278	369	132	1	1,181
Mean Angler Day Length (hr.)										
- All anglers	3.0	4.5	5.4	5.6	6.7	6.2	6.9	5.6	6.0	6.2
- Complete trip interviews										
Number	8	47	72	87	72	173	227	86	1	773
Hours	2.8	4.4	5.1	5.2	6.2	5.6	6.1	5.0	6.0	5.5
- Incomplete trip interviews										
Number	1	12	20	30	52	105	142	46	0	408
Hours	6.0	5.0	6.5	6.5	7.3	7.3	8.0	6.8	-	7.3
Mean number of anglers in party	1.0	1.3	1.5	1.9	1.7	1.6	1.6	1.6	1.0	1.6
Target Species										
- Chinook	0	0	0	4	20	1	0	0	0	25
- Chinook jack	0	0	0	39	3	3	0	0	0	45
- Coho	0	0	0	1	0	2	2	112	1	118
- Coho jack	0	0	0	0	0	70	0	0	0	70
- Steelhead	1	0	0	0	0	0	0	0	0	1
- Cutthroat	0	24	1	0	1	0	0	2	0	28
- Dolly Varden	3	7	0	0	0	0	1	0	0	11
- Anything	5	28	91	73	100	202	366	18	0	883
Harvested Catch										
- Chinook	0	0	0	2	1	0	1	0	0	4
- Chinook jack	0	0	3	25	26	7	0	0	0	61
- Coho	0	0	0	0	0	2	113	10	0	125
- Coho jack	0	0	0	0	10	85	9	0	0	104
- Sockeye	0	0	0	3	2	6	0	0	0	11
- Chum	0	0	0	0	0	0	3	4	0	7
- Steelhead	0	0	1	0	0	1	2	0	0	4
- Rainbow	0	1	0	0	0	3	0	1	0	5
- Cutthroat	0	0	1	1	7	0	0	10	0	19
- Dolly Varden	0	1	17	2	15	12	16	4	0	67
Released Catch										
- Chinook	0	0	0	0	1	2	0	0	0	3
- Chinook jack	0	0	0	13	8	1	0	0	0	22
- Sockeye	0	0	0	0	1	0	0	0	0	1
- Rainbow	0	0	0	0	0	1	0	0	0	1
Inspection of Catch										
- Number	0	0	13	33	52	85	36	25	0	244
- Number correct	0	0	13	33	52	85	36	25	0	244

Continued

Appendix 13a. Interview responses by month in Region 1 (Strait of Georgia to Pitt River) in the 1988 lower Fraser River sport fishery, continued.

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Gear										
- Bait	6	57	90	112	120	271	353	132	1	1,142
- Lure	3	1	0	1	1	0	16	0	0	22
- Bait/Lure	0	1	2	4	3	7	0	0	0	17
- Fly	0	0	0	0	0	0	0	0	0	0

a. Study sites: Bro - Brownsville Bar
Ric - Richmond Dump Bar
Riv - River Road Bar
Tre - Tree Island Bar

Appendix 13b. Interview responses by month in Region 2 (Pitt River to Sumas River) in the 1988 lower Fraser River sport fishery.

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Study Sites a	Dun Edg Sta	Dun Edg Sta	Dun Edg Sta	Dun Edg Sta	Dun Edg Rid Sta	Dun Edg Rid Sta	Dun Edg Rid Sta Two	Dun Edg Rid Sta Two	Dun Edg Sta	-
Number of interviews	192	787	1,303	2,052	1,622	1,992	2,828	1,950	217	12,943
Mean Angler Day Length (hr.)										
- All anglers	4.5	5.0	6.0	6.9	6.1	6.4	6.5	5.7	3.7	6.2
- Complete trip interviews										
Number	137	519	781	1,221	1,010	1,243	1,864	1,072	197	8,044
Hours	4.0	4.4	4.9	5.7	5.1	5.7	5.8	4.9	3.6	5.3
- Incomplete trip interviews										
Number	55	268	522	831	612	749	964	878	20	4,899
Hours	5.7	6.2	7.5	8.6	7.8	7.6	7.9	6.7	4.0	7.6
Mean number of anglers in party	1.6	1.7	1.7	1.8	1.8	1.9	2.1	1.8	1.6	1.8
Target Species										
- Chinook	0	0	0	192	56	0	0	0	0	248
- Coho	0	0	0	0	13	0	86	149	0	248
- Steelhead	0	6	0	0	21	0	0	0	0	27
- Cutthroat	3	4	1	0	1	139	0	0	0	148
- Dolly Varden	0	2	0	0	0	0	0	0	0	2
- Sturgeon	0	4	0	1	1	2	0	0	0	8
- Anything	189	771	1,302	1,859	1,529	1,848	2,739	1,801	217	12,255
Harvested Catch										
- Chinook	0	3	7	5	0	0	0	0	0	15
- Chinook jack	0	4	47	71	29	10	3	0	0	164
- Coho	0	0	0	0	4	65	438	360	0	867
- Coho jack	0	0	0	8	16	67	374	306	0	771
- Chum	0	0	0	0	0	0	4	1	0	5
- Steelhead	0	3	6	6	2	0	2	1	0	20
- Rainbow	1	0	2	3	7	9	6	10	5	43
- Cutthroat	1	2	4	3	7	17	63	4	0	101
- Dolly Varden	0	2	5	3	0	2	1	0	0	13
- Sturgeon	0	1	0	1	1	0	1	0	0	4
Released Catch										
- Chinook	0	1	2	0	0	0	0	0	0	3
- Coho	0	0	0	0	0	0	1	1	0	2
- Coho jack	0	0	0	0	0	0	8	4	0	12
- Steelhead	0	1	0	0	0	0	0	0	0	1
- Rainbow	0	4	0	0	0	1	1	2	1	9
- Cutthroat	0	1	0	0	1	5	1	1	0	9
- Dolly Varden	0	0	0	0	0	0	0	0	1	1
- Sturgeon	0	11	9	3	6	9	6	3	0	47

Continued

Appendix 13b. Interview responses by month in Region 2 (Pitt River to Sumas River) in the 1988 lower Fraser River sport fishery, continued.

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Inspection of Catch										
- Number	0	0	41	71	64	132	197	483	2	990
- Number correct	0	0	41	71	59	131	196	483	2	983
Gear										
- Bait	191	769	1,289	2,039	1,602	1,971	2,813	1,928	202	12,804
- Lure	0	3	0	0	2	3	4	3	2	17
- Bait/Lure	1	4	14	13	18	17	7	19	13	106
- Fly	0	0	0	0	0	0	0	0	0	0

a. Study sites: Dun - Duncan Bar
Edg - Edgewater Bar
Rid - Ridgedale Bar
Sta - Standard Gas Bar
Two - Two Bit Bar

Appendix 13c. Interview responses by month in Region 3 (Sumas River to Harrison River) in the 1988 lower Fraser River sport fishery.

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Study Sites a	-	-	Que	Eng Que Win	Bow Eng Que Win	Bow Eng Que Win	Bow Eng Win	Bow Eng	Eng	-
Number of Interviews	0	0	8	553	368	757	552	63	2	2,303
Mean Angler Day Length (hr.)										
- All anglers	-	-	6.0	9.6	9.4	11.1	8.5	4.5	3.0	9.7
- Complete trip interviews										
Number	0	0	8	363	178	204	210	47	2	1,012
Hours	-	-	6.0	8.0	7.3	7.3	6.4	3.7	3.0	7.2
- Incomplete trip interviews										
Number	0	0	0	190	190	553	342	16	0	1,291
Hours	-	-	-	12.8	11.4	12.5	9.7	6.6	-	11.6
Mean number of anglers per party	-	-	-	2.8	2.4	3.1	2.8	1.6	2.0	2.8
Target Species										
- Chinook	0	0	0	39	1	0	0	0	0	40
- Anything	0	0	8	514	367	757	552	63	2	2,263
Harvested Catch										
- Chinook	0	0	0	118	16	37	10	0	0	181
- Chinook jack	0	0	0	20	43	125	42	0	0	230
- Coho	0	0	0	0	3	49	50	1	0	103
- Coho jack	0	0	0	0	0	6	10	0	0	16
- Steelhead	0	0	0	0	1	9	14	0	0	24
- Rainbow	0	0	0	2	0	0	0	0	0	2
- Cutthroat	0	0	0	0	0	0	1	0	0	1
- Dolly Varden	0	0	0	0	0	1	0	0	0	1
Released Catch										
- Chinook	0	0	5	8	0	1	0	0	0	14
- Chinook jack	0	0	0	0	5	21	7	0	0	33
- Coho	0	0	0	0	0	1	0	0	0	1
- Sockeye	0	0	0	1	4	0	0	0	0	5
- Chum	0	0	0	0	0	1	2	1	0	4
- Steelhead	0	0	0	0	0	4	7	0	0	11
- Rainbow	0	0	0	1	0	0	0	0	0	1
- Cutthroat	0	0	0	0	0	1	0	0	0	1
- Sturgeon	0	0	0	0	0	1	0	0	0	1
Inspection of Catch										
- Number	0	0	0	127	61	177	40	1	0	406
- Number correct	0	0	0	127	61	177	40	1	0	406

Continued

Appendix 13c. Interview responses by month in Region 3 (Sumas River to Harrison River) in the 1988 lower Fraser River sport fishery, continued.

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Gear										
- Bait	0	0	2	11	4	46	351	48	0	462
- Lure	0	0	6	494	290	451	181	11	0	1,433
- Bait/Lure	0	0	0	48	71	260	18	4	2	403
- Fly	0	0	0	0	0	0	0	0	0	0

a. Study sites: Bow - Bowman's Bar
Eng - Englebrich Bar
Que - Queen's Island Bar
Win - Wing Dam Bar

Appendix 14. Daily angler counts by region in the 1988 lower Fraser River sport fishery.

Month	Date	Day of week	Weather	Region a				Total
				1	2	3	4	
April	22-Apr	Fri	Overcast	10	39	1	2	52
	24-Apr	Sun	Overcast	18	52	2	0	72
May	08-May	Sun	Clear	51	124	14	2	191
	12-May	Thu	Clear	10	33	6	0	49
	28-May	Sat	Rain	30	42	4	3	79
	30-May	Mon	Clear	19	35	3	0	57
	Weekday	Mean	-	15	34	5	0	53
		%	-	27.4%	64.2%	8.5%	0.0%	-
	Weekend	Mean	-	41	83	9	3	135
		%	-	30.0%	61.5%	6.7%	1.9%	-
June	10-Jun	Fri	Overcast	10	26	0	0	36
	11-Jun	Sat	Clear	55	145	15	0	215
	13-Jun	Mon	Clear	29	66	5	0	100
	18-Jun	Sat	Overcast	46	117	10	4	177
	26-Jun	Sun	Overcast	83	159	25	3	270
	29-Jun	Wed	Overcast	14	53	16	0	83
	Weekday	Mean	-	18	48	7	0	73
		%	-	24.2%	66.2%	9.6%	0.0%	-
	Weekend	Mean	-	61	140	17	2	221
		%	-	27.8%	63.6%	7.6%	1.1%	-
July	01-Jul	Fri b	Overcast	41	159	194	17	411
	07-Jul	Thu	Clear	36	102	100	7	245
	10-Jul	Sun	Clear	66	157	168	40	431
	13-Jul	Wed	Overcast	39	79	72	21	211
	16-Jul	Sat	Clear	64	122	185	35	406
	18-Jul	Mon	Clear	21	88	103	21	233
	24-Jul	Sun	Clear	59	162	190	34	445
	29-Jul	Fri	Clear	35	84	57	21	197
	Weekday	Mean	-	33	88	83	18	222
		%	-	14.8%	39.8%	37.5%	7.9%	-
	Weekend	Mean	-	58	150	184	32	423
		%	-	13.6%	35.4%	43.5%	7.4%	-
August	01-Aug	Mon b	Overcast	67	196	144	40	447
	04-Aug	Thu	Clear	37	92	49	10	188
	07-Aug	Sun	Overcast	97	199	171	30	497
	12-Aug	Fri	Clear	32	94	47	13	186
	13-Aug	Sat	Overcast	67	187	95	20	369
	17-Aug	Wed	Overcast	43	100	55	7	205
	21-Aug	Sun	Clear	116	299	125	28	568
	23-Aug	Tue	Clear	35	88	61	12	196
	27-Aug	Sat	Clear	62	245	155	26	488
	29-Aug	Mon	Overcast	55	124	43	17	239

Continued

Appendix 14. Daily angler counts by region in the 1988 lower Fraser River sport fishery, cont'd.

Month	Date	Day of week	Weather	Region a				Total
				1	2	3	4	
August	Weekday	Mean	-	40	100	51	12	203
		%	-	19.9%	49.1%	25.1%	5.8%	-
	Weekend	Mean	-	82	225	138	29	474
		%	-	17.3%	47.5%	29.1%	6.1%	-
September	01-Sep	Thu	Clear	32	105	72	11	220
	03-Sep	Sat	Clear	61	235	253	26	575
	07-Sep	Wed	Overcast	27	69	69	12	177
	10-Sep	Sat	Clear	79	245	210	25	559
	11-Sep	Sun	Clear	84	407	250	25	766
	13-Sep	Tue	Clear	39	121	96	24	280
	17-Sep	Sat	Clear	134	344	273	26	777
	19-Sep	Mon	Overcast	65	91	118	22	296
	25-Sep	Sun	Overcast	222	520	295	45	1,082
	28-Sep	Wed	Overcast	95	196	170	22	483
	Weekday	Mean	-	52	116	105	18	291
		%	-	17.7%	40.0%	36.1%	6.3%	-
	Weekend	Mean	-	116	350	256	29	752
		%	-	15.4%	46.6%	34.1%	3.9%	-
October	02-Oct	Sun	Clear	301	706	511	75	1,593
	04-Oct	Tue	Overcast	106	218	153	13	490
	10-Oct	Mon b	Clear	330	758	490	107	1,685
	13-Oct	Thu	Rain	99	149	115	33	396
	16-Oct	Sun	Overcast	273	665	158	47	1,143
	22-Oct	Sat	Overcast	229	588	164	41	1,022
	24-Oct	Mon	Overcast	207	303	90	12	612
	28-Oct	Fri	Overcast	217	285	69	14	585
	Weekday	Mean	-	157	239	107	18	521
		%	-	30.2%	45.8%	20.5%	3.5%	-
	Weekend	Mean	-	283	679	331	68	1,361
		%	-	20.8%	49.9%	24.3%	5.0%	-
November	03-Nov	Thu	Rain	155	151	32	12	350
	13-Nov	Sun	Clear	269	428	61	26	784
	16-Nov	Wed	Overcast	118	136	34	5	293
	19-Nov	Sat	Rain	78	74	48	16	216
	21-Nov	Mon	Overcast	55	63	9	7	134
	26-Nov	Sat	Overcast	92	92	42	8	234
	Weekday	Mean	-	109	117	25	8	259
		%	-	42.2%	45.0%	9.7%	3.1%	-
	Weekend	Mean	-	146	198	50	17	411
		%	-	35.6%	48.1%	12.2%	4.1%	-
December	13-Dec	Tue	-	3	17	7	3	30
	18-Dec	Sun	-	6	12	20	17	55

a. Regions were: 1 - Strait of Georgia to Pitt River;
2 - Pitt River to Sumas River;
3 - Sumas River to Harrison River;
4 - Harrison River to top of Weaver Slough.

b. Statutory holiday.

Appendix 15a. Mean proportion of daily angler effort per hour in Region 1 (Strait of Georgia to Pitt River) in the 1988 lower Fraser River sport fishery.

Day type	Hour	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Weekday	3:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	4:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	5:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	6:00	0.0%	0.0%	0.3%	0.0%	0.3%	1.2%	1.4%	3.7%	0.0%
	7:00	0.0%	0.0%	1.3%	0.4%	0.8%	3.5%	4.0%	8.8%	0.0%
	8:00	0.0%	2.0%	2.6%	2.6%	2.1%	6.1%	8.1%	5.0%	0.0%
	9:00	4.5%	2.0%	7.3%	3.9%	3.4%	8.5%	10.4%	9.3%	0.0%
	10:00	4.5%	14.0%	9.9%	12.4%	8.1%	11.1%	12.8%	12.1%	0.0%
	11:00	12.1%	16.1%	10.3%	12.9%	9.3%	11.5%	12.2%	14.6%	0.0%
	12:00	12.1%	14.0%	10.0%	12.9%	12.1%	13.0%	12.4%	16.1%	0.0%
	13:00	9.1%	15.4%	10.8%	11.9%	13.7%	11.8%	11.4%	11.6%	0.0%
	14:00	9.1%	12.7%	10.3%	10.7%	12.4%	9.9%	9.7%	8.8%	0.0%
	15:00	12.1%	10.7%	10.1%	8.8%	12.4%	9.5%	8.2%	6.8%	0.0%
	16:00	18.2%	9.0%	10.3%	8.0%	9.2%	6.5%	5.3%	2.7%	0.0%
	17:00	9.1%	3.0%	8.6%	7.0%	5.8%	3.7%	2.4%	0.6%	0.0%
	18:00	9.1%	1.0%	2.3%	5.4%	4.7%	2.6%	0.7%	0.0%	0.0%
	19:00	0.0%	0.0%	2.9%	2.1%	3.2%	0.7%	0.6%	0.0%	0.0%
	20:00	0.0%	0.0%	2.9%	0.5%	1.1%	0.4%	0.2%	0.0%	0.0%
	21:00	0.0%	0.0%	0.0%	0.5%	1.1%	0.0%	0.0%	0.0%	0.0%
	22:00	0.0%	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%
	23:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	24:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Weekend	2:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	3:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	4:00	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	5:00	0.0%	0.0%	0.8%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
	6:00	0.0%	0.4%	1.4%	1.2%	1.1%	1.3%	1.7%	0.7%	0.0%
	7:00	0.0%	3.1%	2.5%	3.7%	2.6%	3.5%	4.3%	3.1%	0.0%
	8:00	0.0%	6.2%	3.7%	7.4%	3.4%	5.7%	6.4%	4.3%	7.7%
	9:00	0.0%	6.2%	10.6%	8.9%	8.6%	7.1%	8.0%	8.6%	15.4%
	10:00	0.0%	9.3%	15.6%	13.1%	11.2%	11.3%	10.0%	11.2%	15.4%
	11:00	0.0%	15.6%	14.3%	13.1%	13.3%	14.9%	12.0%	13.8%	15.4%
	12:00	0.0%	13.2%	11.0%	1. 1%	14.6%	12.4%	12.9%	14.3%	15.4%
	13:00	22.2%	16.3%	9.9%	10.2%	13.0%	10.7%	12.3%	13.1%	15.4%
	14:00	22.2%	11.7%	9.4%	9.5%	11.2%	10.0%	10.8%	9.2%	15.4%
	15:00	22.2%	10.1%	8.6%	8.1%	9.4%	9.1%	9.3%	8.4%	0.0%
	16:00	33.3%	6.2%	6.9%	8.7%	5.2%	4.6%	5.3%	8.4%	0.0%
	17:00	0.0%	1.6%	3.7%	2.4%	3.4%	3.3%	3.3%	4.3%	0.0%
	18:00	0.0%	0.0%	0.6%	1.6%	2.6%	2.3%	1.7%	0.8%	0.0%
	19:00	0.0%	0.0%	0.6%	0.0%	0.4%	2.0%	1.5%	0.0%	0.0%
	20:00	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%	0.3%	0.0%	0.0%
	21:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.1%	0.0%	0.0%
	22:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	23:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Appendix 15b. Mean proportion of daily angler effort per hour in Region 2 (Pitt River Sumas River) in the 1988 lower Fraser River sport fishery.

Day type	Hour	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Weekday	3:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	4:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	5:00	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.4%	0.0%	0.0%
	6:00	0.0%	0.1%	0.7%	0.7%	0.4%	0.8%	1.2%	0.9%	0.1%
	7:00	0.0%	0.5%	2.0%	2.0%	1.4%	2.5%	3.4%	2.9%	0.3%
	8:00	1.9%	1.6%	4.0%	3.7%	3.0%	3.8%	5.8%	5.1%	2.1%
	9:00	3.4%	3.2%	5.8%	5.6%	5.0%	6.1%	8.5%	7.8%	5.9%
	10:00	4.8%	5.8%	8.7%	7.3%	6.2%	7.9%	10.4%	10.0%	11.5%
	11:00	9.3%	7.2%	9.6%	8.9%	7.7%	9.9%	10.5%	11.2%	13.7%
	12:00	12.1%	9.7%	9.5%	9.8%	9.3%	10.2%	11.3%	11.5%	16.2%
	13:00	13.2%	12.0%	10.1%	8.7%	9.8%	10.6%	11.0%	11.7%	16.8%
	14:00	12.9%	12.2%	9.7%	9.5%	9.2%	10.4%	10.0%	12.1%	12.9%
	15:00	11.7%	11.3%	8.1%	8.6%	8.9%	9.6%	8.6%	11.1%	11.3%
	16:00	10.0%	10.8%	7.3%	7.7%	8.2%	7.5%	7.2%	9.1%	8.6%
	17:00	9.1%	9.5%	6.3%	6.4%	7.3%	6.4%	5.6%	4.6%	0.6%
	18:00	7.3%	5.8%	6.0%	6.3%	6.6%	6.2%	4.1%	1.3%	0.1%
	19:00	3.2%	4.4%	5.7%	5.5%	6.2%	5.1%	1.2%	0.2%	0.0%
	20:00	0.9%	3.0%	4.5%	5.3%	5.7%	2.0%	0.4%	0.1%	0.0%
	21:00	0.1%	1.7%	1.9%	2.9%	3.3%	0.5%	0.2%	0.1%	0.0%
	22:00	0.0%	0.7%	0.3%	0.9%	1.1%	0.2%	0.2%	0.0%	0.0%
	23:00	0.0%	0.4%	0.0%	0.2%	0.3%	0.2%	0.1%	0.0%	0.0%
	24:00	0.0%	0.1%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%
Weekend	2:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	3:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	4:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.2%	0.0%
	5:00	0.0%	0.0%	0.0%	0.2%	0.1%	0.2%	0.5%	0.6%	0.0%
	6:00	0.5%	0.3%	0.6%	0.6%	0.6%	1.0%	1.6%	1.5%	0.0%
	7:00	1.4%	1.8%	1.7%	1.6%	1.9%	2.2%	4.4%	4.3%	0.3%
	8:00	3.6%	3.4%	3.1%	3.2%	3.8%	4.1%	7.4%	6.4%	2.1%
	9:00	4.3%	4.6%	5.9%	5.2%	5.8%	6.6%	8.8%	8.2%	5.4%
	10:00	5.7%	7.2%	7.4%	7.0%	7.8%	8.5%	10.3%	9.7%	9.7%
	11:00	7.5%	9.8%	9.1%	8.5%	8.7%	9.1%	10.1%	10.9%	12.3%
	12:00	9.1%	10.8%	9.4%	9.1%	8.8%	10.5%	10.2%	11.9%	11.6%
	13:00	10.2%	10.8%	9.6%	10.3%	9.0%	11.1%	10.0%	11.5%	15.1%
	14:00	13.3%	11.1%	9.9%	10.0%	9.1%	10.9%	9.8%	11.2%	17.6%
	15:00	10.2%	10.3%	9.8%	9.4%	8.7%	9.9%	8.0%	9.3%	14.6%
	16:00	11.1%	8.6%	8.8%	8.5%	8.4%	9.0%	6.5%	7.9%	8.8%
	17:00	9.3%	7.2%	7.9%	7.3%	7.7%	6.6%	5.0%	4.4%	2.2%
	18:00	6.8%	5.9%	6.4%	6.5%	5.8%	4.8%	3.7%	1.6%	0.2%
	19:00	4.6%	3.8%	4.7%	5.4%	4.9%	3.4%	2.8%	0.5%	0.1%
	20:00	2.2%	2.5%	3.5%	3.9%	4.1%	1.9%	0.5%	0.0%	0.0%
	21:00	0.1%	1.3%	1.7%	2.4%	2.7%	0.4%	0.1%	0.0%	0.0%
	22:00	0.0%	0.5%	0.4%	0.8%	1.4%	0.0%	0.0%	0.0%	0.0%
	23:00	0.0%	0.2%	0.1%	0.2%	0.6%	0.0%	0.0%	0.0%	0.0%
	24:00	0.0%	0.1%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%

Appendix 15c. Mean proportion of daily angler effort per hour in Region 3 (Sumas River to Harrison River) in the 1988 lower Fraser River sport fishery. a

Day type	Hour	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Weekday	1:00	-	-	0.0%	0.0%	0.2%	0.3%	0.0%	0.0%	0.0%
	2:00	-	-	0.0%	0.0%	0.5%	0.6%	0.0%	0.0%	0.0%
	3:00	-	-	0.0%	0.0%	0.5%	0.6%	0.0%	0.0%	0.0%
	4:00	-	-	0.0%	0.0%	0.5%	0.6%	0.0%	0.0%	0.0%
	5:00	-	-	0.0%	0.0%	0.5%	0.6%	0.1%	0.0%	0.0%
	6:00	-	-	0.0%	2.8%	0.9%	1.5%	1.0%	0.0%	0.0%
	7:00	-	-	0.0%	6.7%	1.9%	3.6%	3.5%	10.4%	0.0%
	8:00	-	-	0.0%	7.8%	5.1%	5.1%	4.8%	7.5%	0.0%
	9:00	-	-	0.0%	7.7%	6.8%	6.4%	6.2%	9.2%	0.0%
	10:00	-	-	0.0%	7.7%	7.6%	7.1%	6.9%	11.6%	0.0%
	11:00	-	-	0.0%	7.5%	8.6%	7.9%	9.6%	15.6%	0.0%
	12:00	-	-	0.0%	6.1%	9.7%	8.3%	9.4%	14.5%	33.3%
	13:00	-	-	0.0%	8.5%	9.3%	8.6%	9.6%	11.0%	33.0%
	14:00	-	-	0.0%	8.3%	9.0%	8.9%	9.1%	9.2%	33.3%
	15:00	-	-	0.0%	7.8%	6.4%	8.3%	7.9%	8.7%	0.0%
	16:00	-	-	0.0%	9.1%	5.2%	6.0%	9.6%	2.3%	0.0%
	17:00	-	-	0.0%	6.4%	6.0%	5.1%	8.3%	0.0%	0.0%
	18:00	-	-	0.0%	5.4%	5.7%	5.0%	6.4%	0.0%	0.0%
	19:00	-	-	0.0%	3.3%	5.4%	4.4%	5.0%	0.0%	0.0%
	20:00	-	-	0.0%	2.0%	4.1%	4.3%	1.5%	0.0%	0.0%
	21:00	-	-	0.0%	1.5%	4.0%	2.4%	0.5%	0.0%	0.0%
	22:00	-	-	0.0%	0.9%	1.3%	1.9%	0.4%	0.0%	0.0%
	23:00	-	-	0.0%	0.3%	0.6%	1.8%	0.2%	0.0%	0.0%
	24:00	-	-	0.0%	0.1%	0.3%	0.9%	0.0%	0.0%	0.0%
Weekend	1:00	-	-	0.0%	0.0%	0.1%	1.1%	0.1%	0.0%	0.0%
	2:00	-	-	0.0%	0.0%	0.2%	1.8%	0.1%	0.0%	0.0%
	3:00	-	-	0.0%	0.0%	0.2%	1.9%	0.1%	0.0%	0.0%
	4:00	-	-	0.0%	0.0%	0.2%	1.9%	0.1%	0.0%	0.0%
	5:00	-	-	0.0%	0.1%	0.4%	2.0%	0.2%	0.0%	0.0%
	6:00	-	-	4.2%	0.8%	1.5%	3.4%	2.6%	0.0%	0.0%
	7:00	-	-	8.4%	1.5%	3.0%	5.7%	8.0%	0.0%	0.0%
	8:00	-	-	8.4%	4.2%	4.3%	7.3%	9.1%	6.4%	0.0%
	9:00	-	-	8.4%	4.5%	5.3%	8.0%	10.2%	7.7%	0.0%
	10:00	-	-	8.4%	4.6%	5.4%	8.5%	11.1%	11.5%	0.0%
	11:00	-	-	8.4%	6.2%	5.7%	8.8%	9.8%	15.2%	0.0%
	12:00	-	-	11.8%	5.8%	5.9%	8.5%	10.3%	16.6%	0.0%
	13:00	-	-	11.8%	10.1%	7.8%	8.6%	9.7%	13.5%	0.0%
	14:00	-	-	8.4%	9.4%	7.4%	8.1%	9.4%	10.6%	0.0%
	15:00	-	-	5.0%	8.3%	6.7%	8.2%	8.2%	8.4%	0.0%
	16:00	-	-	8.4%	9.7%	9.7%	5.1%	3.8%	7.4%	0.0%
	17:00	-	-	8.4%	8.6%	8.1%	3.4%	2.9%	2.8%	0.0%
	18:00	-	-	0.0%	7.8%	7.4%	3.0%	1.9%	0.0%	0.0%
	19:00	-	-	0.0%	6.7%	6.3%	2.5%	1.8%	0.0%	0.0%
	20:00	-	-	0.0%	4.9%	5.9%	2.3%	0.4%	0.0%	0.0%
	21:00	-	-	0.0%	3.7%	4.6%	0.0%	0.0%	0.0%	0.0%
	22:00	-	-	0.0%	1.5%	2.1%	0.0%	0.0%	0.0%	0.0%
	23:00	-	-	0.0%	1.0%	1.2%	0.0%	0.0%	0.0%	0.0%
	24:00	-	-	0.0%	0.5%	0.6%	0.0%	0.0%	0.0%	0.0%

a. '-' indicates the monthly effort profile was not assessed.

Appendix 15d. Mean proportion of daily angler effort per hour in Region 4 (Harrison River to the top of Waleach Slough) in the 1988 lower Fraser River sport fishery. a

Day type	Hour	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Weekday	3:00	-	-	-	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	4:00	-	-	-	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	5:00	-	-	-	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%
	6:00	-	-	-	3.5%	0.5%	0.5%	0.3%	0.0%	0.0%
	7:00	-	-	-	8.4%	1.2%	1.7%	2.4%	10.3%	0.0%
	8:00	-	-	-	8.4%	5.4%	4.4%	3.9%	5.2%	0.0%
	9:00	-	-	-	8.4%	7.5%	5.4%	4.9%	8.2%	0.0%
	10:00	-	-	-	8.4%	8.5%	6.1%	5.9%	12.4%	0.0%
	11:00	-	-	-	8.4%	9.2%	7.1%	11.1%	19.6%	0.0%
	12:00	-	-	-	6.6%	10.1%	7.4%	11.1%	17.5%	33.3%
	13:00	-	-	-	7.7%	9.8%	7.5%	11.6%	11.3%	33.3%
	14:00	-	-	-	7.7%	9.8%	9.1%	10.9%	8.2%	33.3%
	15:00	-	-	-	7.3%	5.8%	7.9%	8.3%	7.2%	0.0%
	16:00	-	-	-	7.7%	4.0%	10.8%	10.0%	0.0%	0.0%
	17:00	-	-	-	5.5%	5.7%	9.1%	8.1%	0.0%	0.0%
	18:00	-	-	-	4.8%	5.9%	8.5%	6.1%	0.0%	0.0%
	19:00	-	-	-	2.6%	5.7%	6.8%	4.9%	0.0%	0.0%
	20:00	-	-	-	1.8%	4.7%	6.8%	0.6%	0.0%	0.0%
	21:00	-	-	-	1.8%	4.9%	1.0%	0.0%	0.0%	0.0%
	22:00	-	-	-	0.9%	1.3%	0.0%	0.0%	0.0%	0.0%
	23:00	-	-	-	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	24:00	-	-	-	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Weekend	2:00	-	-	-	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	3:00	-	-	-	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	4:00	-	-	-	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	5:00	-	-	-	0.5%	0.0%	0.0%	0.4%	0.0%	0.0%
	6:00	-	-	-	3.7%	0.3%	2.1%	2.2%	0.0%	0.0%
	7:00	-	-	-	6.6%	0.6%	4.7%	7.0%	0.0%	0.0%
	8:00	-	-	-	7.4%	1.9%	7.3%	7.8%	2.7%	0.0%
	9:00	-	-	-	8.3%	2.2%	6.3%	8.6%	6.8%	0.0%
	10:00	-	-	-	8.3%	2.2%	6.9%	9.7%	14.9%	0.0%
	11:00	-	-	-	14.9%	2.2%	9.3%	9.4%	16.2%	0.0%
	12:00	-	-	-	14.9%	2.2%	9.3%	10.1%	20.3%	0.0%
	13:00	-	-	-	9.9%	6.5%	9.3%	10.5%	10.8%	0.0%
	14:00	-	-	-	9.9%	6.5%	9.1%	9.7%	12.2%	0.0%
	15:00	-	-	-	7.4%	6.5%	13.2%	9.0%	5.4%	0.0%
	16:00	-	-	-	3.3%	13.8%	9.2%	5.1%	9.0%	0.0%
	17:00	-	-	-	2.5%	12.5%	5.4%	4.7%	1.8%	0.0%
	18:00	-	-	-	1.2%	12.2%	4.1%	3.1%	0.0%	0.0%
	19:00	-	-	-	1.2%	10.2%	2.9%	2.7%	0.0%	0.0%
	20:00	-	-	-	0.0%	10.2%	0.9%	0.0%	0.0%	0.0%
	21:00	-	-	-	0.0%	7.7%	0.2%	0.0%	0.0%	0.0%
	22:00	-	-	-	0.0%	2.0%	0.0%	0.0%	0.0%	0.0%
	23:00	-	-	-	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

a. '-' indicates the monthly effort profile was not assessed.

Appendix 16a. Mean monthly harvest and release, by species, per angler hour in Region 1 (Strait of Georgia to Pitt River) in the 1988 lower Fraser River sport fishery.

		Catch per unit effort									
		Chinook		Coho							
	Month	Adult	Jack	Adult	Jack	Sock-eye	Chum	Steel-head	Rain-bow	Cut-throat	Dolly Varden
Harvest	Apr	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	May	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0036	0.0000	0.0036
	Jun	0.0000	0.0049	0.0000	0.0000	0.0000	0.0000	0.0017	0.0000	0.0023	0.0275
	Jul	0.0024	0.0424	0.0000	0.0000	0.0092	0.0000	0.0000	0.0000	0.0014	0.0044
	Aug	0.0014	0.0458	0.0000	0.0132	0.0017	0.0000	0.0000	0.0000	0.0095	0.0210
	Sep	0.0000	0.0035	0.0014	0.0585	0.0038	0.0000	0.0005	0.0015	0.0000	0.0074
	Oct	0.0003	0.0000	0.0506	0.0030	0.0000	0.0015	0.0007	0.0000	0.0000	0.0061
	Nov	0.0000	0.3000	0.0076	0.0000	0.0000	0.0052	0.0000	0.0010	0.0195	0.0064
	Dec	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Release	Apr	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	May	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Jun	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Jul	0.0000	0.0206	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Aug	0.0014	0.0107	0.0000	0.0000	0.0012	0.0000	0.0000	0.0000	0.0000	0.0000
	Sep	0.0009	0.0005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0011	0.0000	0.0000
	Oct	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Nov	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Dec	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	Apr	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	May	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0036	0.0000	0.0036
	Jun	0.0000	0.0049	0.0000	0.0000	0.0000	0.0000	0.0017	0.0000	0.0023	0.0275
	Jul	0.0024	0.0630	0.0000	0.0000	0.0092	0.0000	0.0000	0.0000	0.0014	0.0044
	Aug	0.0027	0.0565	0.0000	0.0132	0.0029	0.0000	0.0000	0.0000	0.0095	0.0210
	Sep	0.0009	0.0040	0.0014	0.0585	0.0038	0.0000	0.0005	0.0026	0.0000	0.0074
	Oct	0.0003	0.0000	0.0506	0.0030	0.0000	0.0015	0.0007	0.0000	0.0000	0.0061
	Nov	0.0000	0.0000	0.0076	0.0000	0.0000	0.0052	0.0000	0.0010	0.0195	0.0064
	Dec	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Appendix 16b. Mean monthly harvest and release, by species, per angler hour in Region 2 (Pitt River to Sumas River) in the 1988 lower Fraser River sport fishery.

		Catch per unit effort									
		Chinook		Coho							
	Month	Adult	Jack	Adult	Jack	Chum	Steel-head	Rain-bow	Cut-throat	Dolly Varden	Stur-geon
Harvest	Apr	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0013	0.0011	0.0000	0.0000
	May	0.0008	0.0011	0.0000	0.0000	0.0000	0.0007	0.0000	0.0006	0.0008	0.0002
	Jun	0.0010	0.0067	0.0000	0.0000	0.0000	0.0011	0.0003	0.0007	0.0009	0.0000
	Jul	0.0004	0.0058	0.0000	0.0007	0.0000	0.0004	0.0004	0.0003	0.0003	0.0001
	Aug	0.0000	0.0035	0.0021	0.0001	0.0000	0.0005	0.0008	0.0006	0.0000	0.0002
	Sep	0.0000	0.0012	0.0087	0.0058	0.0000	0.0000	0.0010	0.0032	0.0005	0.0000
	Oct	0.0000	0.0003	0.0246	0.0210	0.0003	0.0001	0.0003	0.0042	0.0001	0.0000
	Nov	0.0000	0.0000	0.0363	0.0299	0.0001	0.0001	0.0007	0.0004	0.0000	0.0000
	Dec	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0024	0.0000	0.0000	0.0000
Release	Apr	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	May	0.0002	0.0000	0.0000	0.0000	0.0000	0.0003	0.0008	0.0002	0.0000	0.0032
	Jun	0.0003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0013
	Jul	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003
	Aug	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0007
	Sep	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0007	0.0014	0.0000	0.0012
	Oct	0.0000	0.0000	0.0000	0.0003	0.0000	0.0000	0.0001	0.0001	0.0000	0.0002
	Nov	0.0000	0.0000	0.0001	0.0002	0.0000	0.0000	0.0001	0.0001	0.0000	0.0002
	Dec	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0006	0.0000	0.0018	0.0000
Total	Apr	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0013	0.0011	0.0000	0.0000
	May	0.0010	0.0011	0.0000	0.0000	0.0000	0.0010	0.0008	0.0008	0.0008	0.0034
	Jun	0.0013	0.0067	0.0000	0.0000	0.0000	0.0011	0.0003	0.0007	0.0009	0.0013
	Jul	0.0004	0.0058	0.0000	0.0007	0.0000	0.0004	0.0004	0.0003	0.0003	0.0004
	Aug	0.0000	0.0035	0.0021	0.0001	0.0000	0.0005	0.0008	0.0008	0.0000	0.0009
	Sep	0.0000	0.0012	0.0087	0.0058	0.0000	0.0000	0.0017	0.0046	0.0005	0.0012
	Oct	0.0000	0.0003	0.0246	0.0213	0.0003	0.0001	0.0004	0.0043	0.0001	0.0002
	Nov	0.0000	0.0000	0.0364	0.0301	0.0001	0.0001	0.0008	0.0005	0.0000	0.0002
	Dec	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0030	0.0000	0.0018	0.0000

Appendix 16c. Mean monthly harvest and release, by species, per angler hour in Region 3 (Sumas River to Harrison River) in the 1988 lower Fraser River sport fishery.

		Catch per unit effort										
		Chinook		Coho		Sock-		Steel-	Rain-	Cut-	Dolly	Stur-
	Month	Adult	Jack	Adult	Jack	eye	Chum	head	bow	throat	Varden	geon
Harvest	Apr	-	-	-	-	-	-	-	-	-	-	-
	May	-	-	-	-	-	-	-	-	-	-	-
	Jun	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Jul	0.0194	0.0031	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001	0.0000	0.0000	0.0000
	Aug	0.0147	0.0071	0.0017	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000
	Sep	0.0053	0.0202	0.0071	0.0010	0.0000	0.0000	0.0015	0.0000	0.0000	0.0001	0.0000
	Oct	0.0025	0.0080	0.0104	0.0028	0.0000	0.0000	0.0026	0.0000	0.0003	0.0000	0.0000
	Nov	0.0000	0.0000	0.0382	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Dec	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Release	Apr	-	-	-	-	-	-	-	-	-	-	-
	May	-	-	-	-	-	-	-	-	-	-	-
	Jun	0.0768	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	0.0000	0.0000	0.0000
	Jul	0.0013	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Aug	0.0000	0.0012	0.0000	0.0000	0.0010	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002
	Sep	0.0001	0.0030	0.0001	0.0000	0.0000	0.0001	0.0005	0.0000	0.0001	0.0000	0.0000
	Oct	0.0000	0.0016	0.0000	0.0000	0.0000	0.0004	0.0017	0.0000	0.0000	0.0000	0.0000
	Nov	0.0000	0.0000	0.0000	0.0000	0.0000	0.0025	0.0000	0.0000	0.0000	0.0000	0.0000
	Dec	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	Apr	-	-	-	-	-	-	-	-	-	-	-
	May	-	-	-	-	-	-	-	-	-	-	-
	Jun	0.0768	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Jul	0.0207	0.0031	0.0000	0.0000	0.0001	0.0000	0.0000	0.0004	0.0000	0.0000	0.0000
	Aug	0.0147	0.0083	0.0017	0.0000	0.0010	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000
	Sep	0.0054	0.0232	0.0072	0.0010	0.0000	0.0001	0.0020	0.0000	0.0001	0.0001	0.0002
	Oct	0.0025	0.0096	0.0104	0.0028	0.0000	0.0004	0.0043	0.0000	0.0003	0.0000	0.0000
	Nov	0.0000	0.0000	0.0382	0.0000	0.0000	0.0025	0.0000	0.0000	0.0000	0.0000	0.0000
	Dec	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Appendix 16d. Mean monthly harvest and release, by species, per angler hour in Region 4 (Sumas River to the top of Waleach Slough) in the 1988 lower Fraser River sport fishery.

		Chinook		Coho			
	Month	Adult	Jack	Adult	Jack	Chum	Steel-head
Harvest	Apr	-	-	-	-	-	-
	May	-	-	-	-	-	-
	Jun	-	-	-	-	-	-
	Jul	0.0108	0.0036	0.0000	0.0000	0.0000	0.0000
	Aug	0.0257	0.0019	0.0042	0.0000	0.0000	0.0000
	Sep	0.0006	0.0094	0.0000	0.0000	0.0000	0.0000
	Oct	0.0000	0.0006	0.0038	0.0000	0.0000	0.0022
	Nov	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Dec	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Release	Apr	-	-	-	-	-	-
	May	-	-	-	-	-	-
	Jun	-	-	-	-	-	-
	Jul	0.0018	0.0000	0.0000	0.0000	0.0000	0.0000
	Aug	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Sep	0.0000	0.0009	0.0000	0.0000	0.0000	0.0000
	Oct	0.0000	0.0000	0.0000	0.0000	0.0015	0.0010
	Nov	0.0000	0.0000	0.0000	0.0000	0.0101	0.0000
	Dec	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	Apr	-	-	-	-	-	-
	May	-	-	-	-	-	-
	Jun	-	-	-	-	-	-
	Jul	0.0126	0.0036	0.0000	0.0000	0.0000	0.0000
	Aug	0.0257	0.0019	0.0042	0.0000	0.0000	0.0000
	Sep	0.0006	0.0102	0.0000	0.0000	0.0000	0.0000
	Oct	0.0000	0.0006	0.0038	0.0000	0.0015	0.0032
	Nov	0.0000	0.0000	0.0000	0.0000	0.0101	0.0000
	Dec	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Appendix 17. Variance estimation procedure for access point surveys (adapted from DPA Group Inc. (MS 1985a)).

CATCH (C)

$$(1) \qquad Var(C) = \bar{c}^2 E^2 \left[\frac{Var(E)}{E^2} + \frac{Var(\bar{c})}{\bar{c}^2} + \frac{Var(E)\,Var(\bar{c})}{\bar{c}^2 E^2} \right]$$

where: E = estimate study period effort (hours);
$Var(E)$ = variance of the estimated study period effort (Equation 2)
$\bar{c}$ = estimated study period catch per angler hour;
$Var(\bar{c})$ = variance of the estimated study period catch per angler hour (Equation 3).

EFFORT (E)

$$(2) \qquad Var(E) = N^2 \left[\frac{\bar{y}_j^*}{\bar{p}_j^*} \right]^2 \left[\frac{Var(\bar{y}_j^*)}{\bar{y}_j^{*2}} + \frac{Var(\bar{p}_j^*)}{\bar{p}_j^{*2}} - \frac{2Cov(\bar{y}_j^*, \bar{p}_j^*)}{(\bar{y}_j^*)(\bar{p}_j^*)} \right]$$

where: N = total days in the study period;
$\bar{y}_j^*$ = mean instantaneous rod count (hour j^*);
$Var\ \bar{y}_j^*$ = variance of the mean rod count at hour j^* (Equation 4);
$\bar{p}_j^*$ = proportion of daily angler hours occurring at the time of the instantaneous rod count;
$Var\ \bar{p}_j^*$ = variance of the proportion of daily angler hours occurring at the time of the instantaneous rod count (Equation 5).

CATCH PER UNIT EFFORT ($\bar{c}$)

Because $\bar{c}$ is a ratio of catch to time of interview ($\hat{X}$) and time fished to time of interview ($\hat{T}$), a Taylor series approximation to the variance of the ratio of random variables was used. Because we expected to interview a relatively large proportion of the anglers the greatest variance was expected to occur at the stint level; consequently, the following estimate embodies only that sampling stage.

$$(3) \qquad Var(\bar{c}) = \left[\frac{\hat{X}}{\hat{T}} \right]^2 \left[\frac{Var(\hat{X})}{\hat{X}^2} + \frac{Var(\hat{T})}{\hat{T}^2} - \frac{2Cov(\hat{X}, \hat{T})}{(\hat{X})(\hat{T})} \right]$$

where: $$Cov(\hat{X}, \hat{T}) = \sum_i \sum_l N^2 (1/n_{ij} - 1/N) \sum_f \left[\frac{(\hat{X}_{ilf}\,\hat{T}_{ilf}) - 1/n_{ij} \sum_f \hat{X}_{ilf} \sum_f \hat{T}_{ilf}}{n_{ij} - 1} \right]$$

$$Var(\hat{X}) = \sum_i \sum_l N^2 (1/n_{ij} - 1/N) \sum_f \left[\frac{(\hat{X}_{ilf} - (1/n_{if} \sum_f \hat{X}_{ilf}))^2}{n_{ij} - 1} \right]$$

$Var(\hat{T})$ is analogous to above.

$\hat{X}_{ilf}$ = estimated total catch for the f^{th} stint of the l^{th} stint type at the i^{th} site;

f_{11f} = estimated total angler hours for the f^{th} stint of the 1^{th} stint type at the i^{th} site;

n_{ij} = number of interview sample days at site i on hour j.

MEAN INSTANTANEOUS ROD COUNT ($\bar{y}_j^*$)

$$(4) \qquad Var(\bar{y}_j^*) = (1/n_j^* - 1/N) \sum_k \left[\frac{(y_j^* k - \bar{y}^*)^2}{n_j^* - 1} \right]$$

where: $\bar{n}_j^*$ = number of instantaneous rod counts at hour j*;

$y_j^*{}_k$ = instantaneous rod count on day k;

$\bar{y}_j^*{}_k$ = estimated mean rod count at hour j*.

PROPORTION OF DAILY EFFORT AT TIME OF INSTANTANEOUS ROD COUNT ($\bar{p}_j^*$).

Because $\bar{p}_j^*$ is a ratio of $\hat{R}_j$ and ΣR_j the following Taylor Series approximation to the variance of the ratio of random variables was used:

$$(5) \qquad Var(\bar{P}_j^*) = \left[\frac{\hat{R}_j^*}{\sum_j \hat{R}_j} \right]^2 \left[\frac{Var(\hat{R}_j^*)}{\hat{R}_j^{*2}} + \frac{Var \sum_j \hat{R}_j}{\sum_j \hat{R}_j^2} - \frac{2Cov(\hat{R}_j^*, \sum_j \hat{R}_j)}{(\hat{R}_j^*)(\sum_j \hat{R}_j)} \right]$$

where:

$$Cov(\hat{R}_j^*, \sum_j \hat{R}_j) = \sum_I N^2 (1/n_{ij}^* - 1/N) \sum_k \left[\frac{(r_{ij}^* k \sum_j r_{ijk}) - (1/n_{ij}^* \sum_k r_{ij}^* k \sum_i \sum_j r_{ijk})}{n_{ij}^* - 1} \right]$$

$$Var(\hat{R}_j^*) = \sum_I N^2 (1/n_{ij}^* - 1/N) \sum_k \left[\frac{(r_{ij}^* k - (1/n_{ij}^* \sum_k r_j^* k))^2}{n_{ij}^* - 1} \right]$$

Var $\sum_j \hat{R}_j$ is analogous to above.

N = number of days in stratum;

n_{ij}^* = number of interview sample days at site i;

r_{ijk} = rod count at site i at hour j on day k;

$r_{ij}^* k$ = rod count at site i on day k at the hour of the instantaneous effort count;

$\hat{R}_j^*$ = estimated total effort (hours) during the instantaneous rod count time block;

$\sum_j \hat{R}_j$ = estimated total effort over all hours and days at the sites surveyed.